The National Strategies
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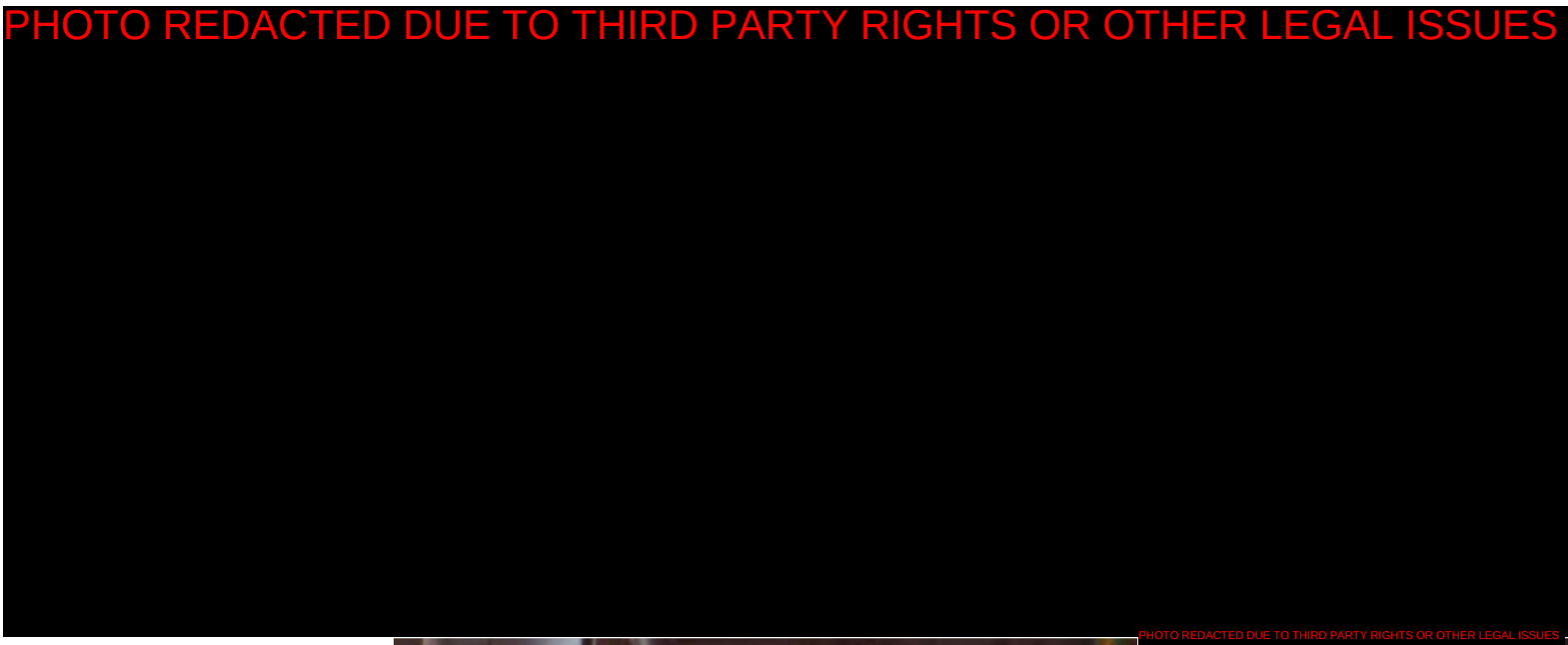

Renewing the Framework for secondary ICT

Spring 2008 subject leader development meeting: Sessions 2, 3 and 4

department for
children, schools and families

National Curriculum

Renewing the Framework for secondary ICT

Spring 2008 subject leader development meeting: Sessions 2, 3 and 4

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Renewing the Framework for secondary ICT

Spring 2008 subject leader development meeting: Sessions 2, 3 and 4

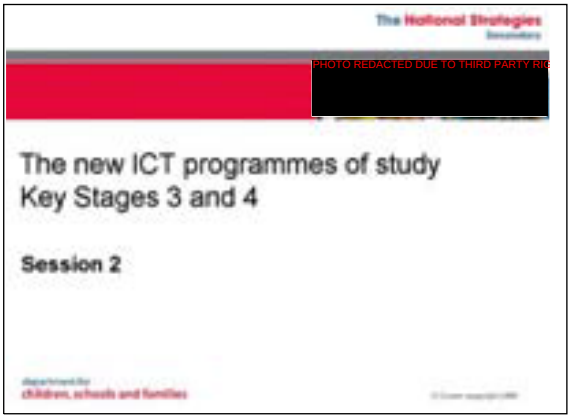
Contents

00126-2008DOM-EN

Lines of progression in ICT **Page**

Session 2: The new ICT programmes of study: Key Stages 3 and 4

Slide 2.1



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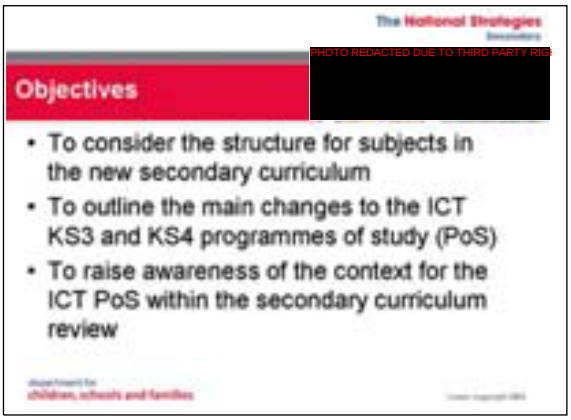

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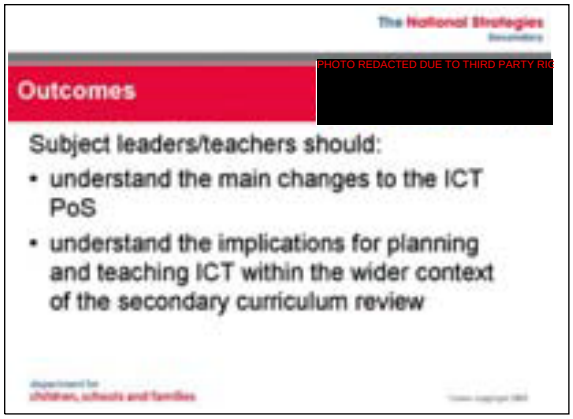

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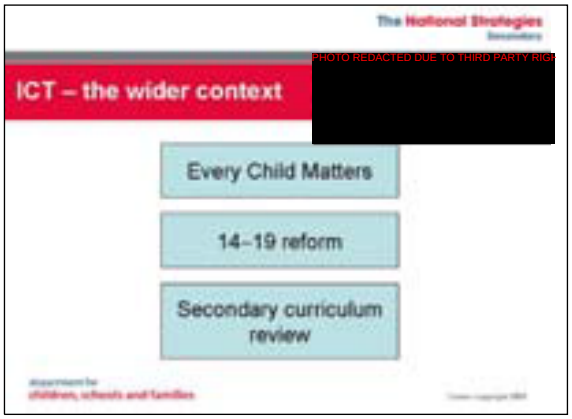

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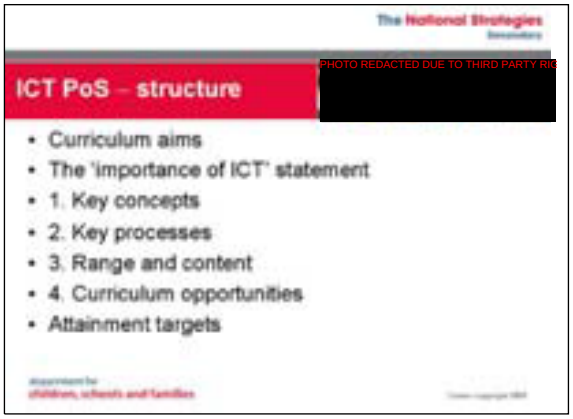

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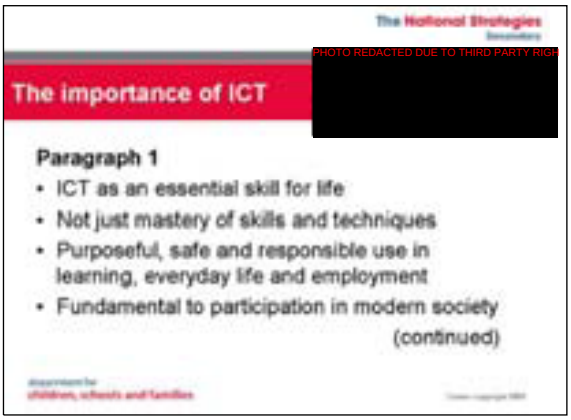
Slide 2.8



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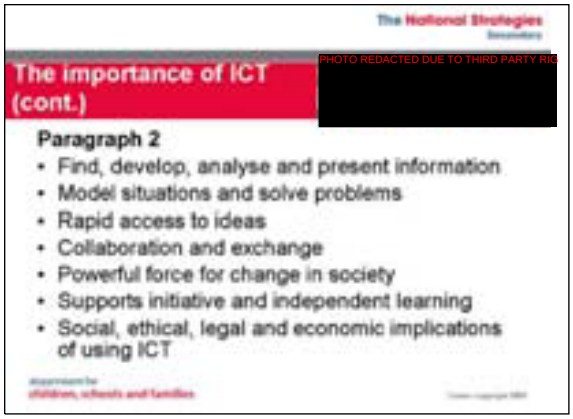

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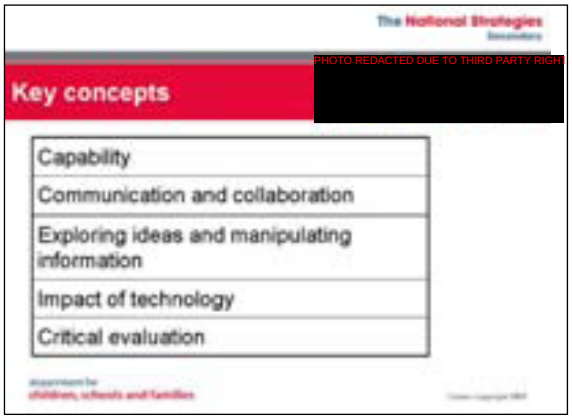

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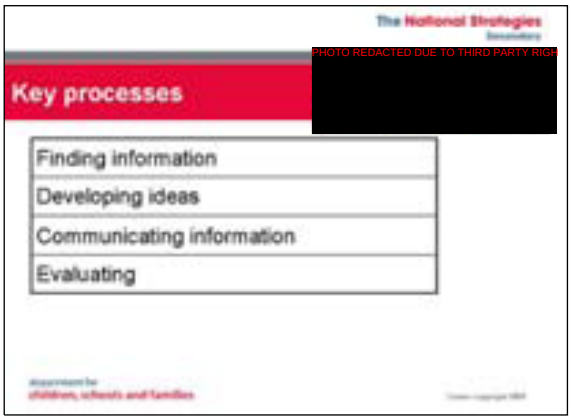

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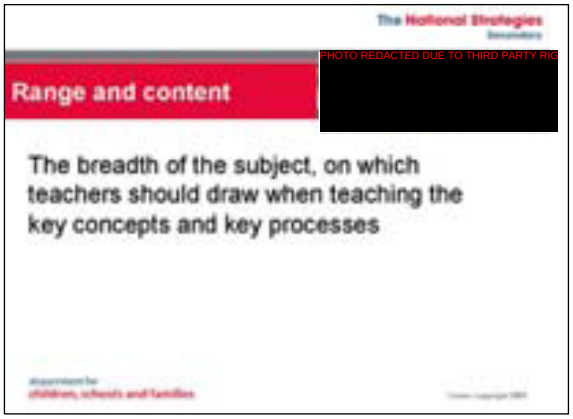

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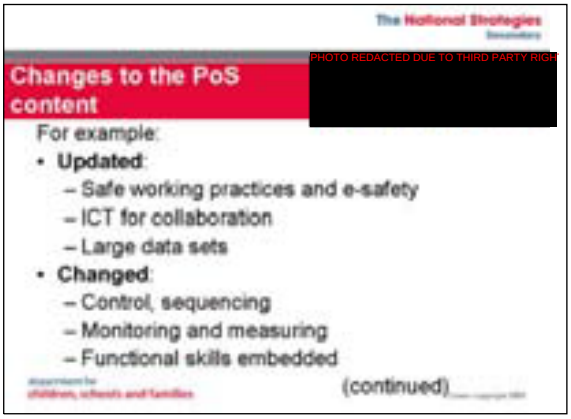

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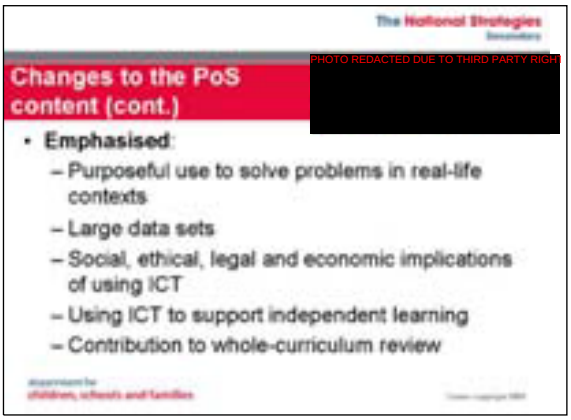

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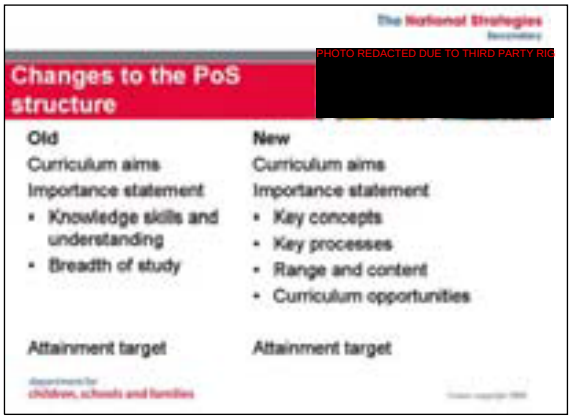

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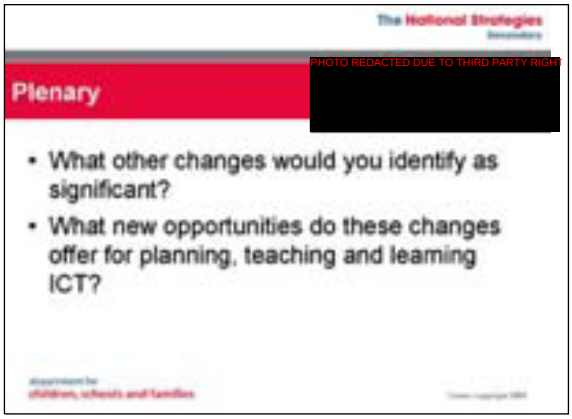

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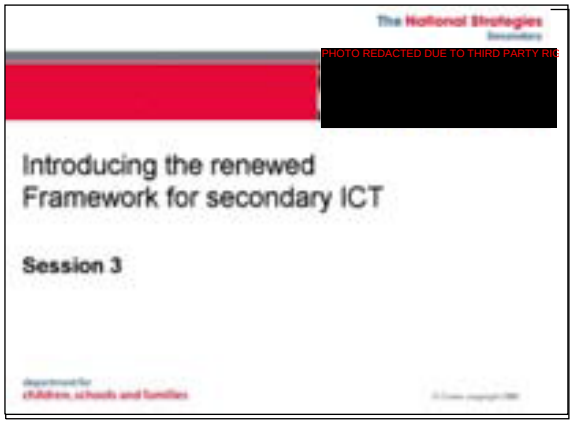
Session 3: Introducing the renewed Framework for secondary ICT

Slide 3.1



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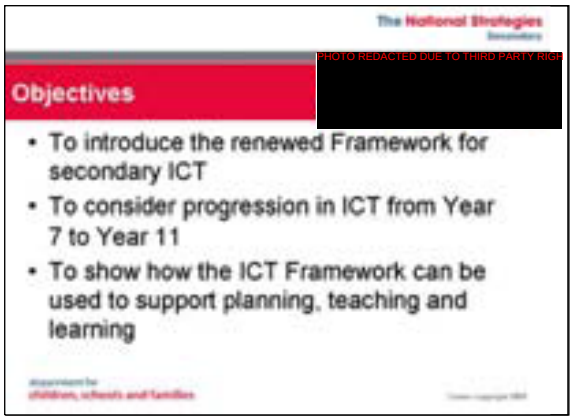

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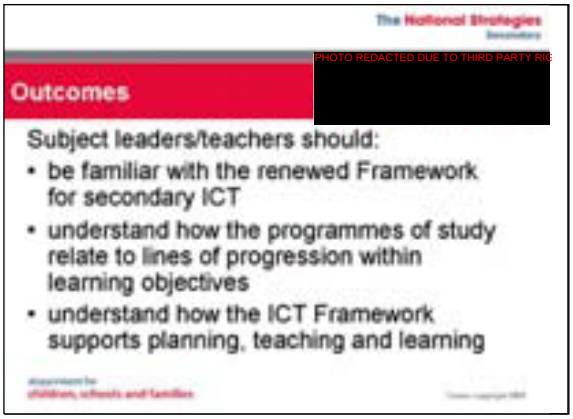

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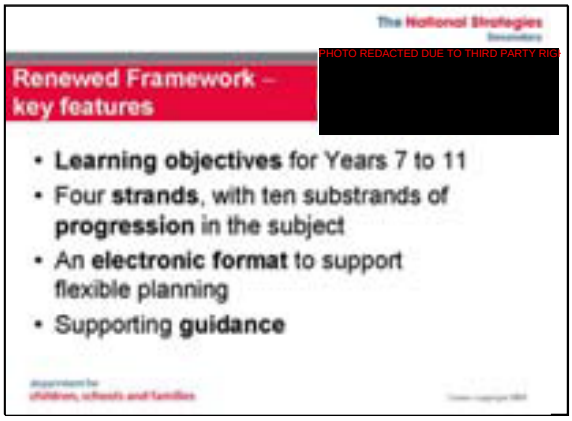

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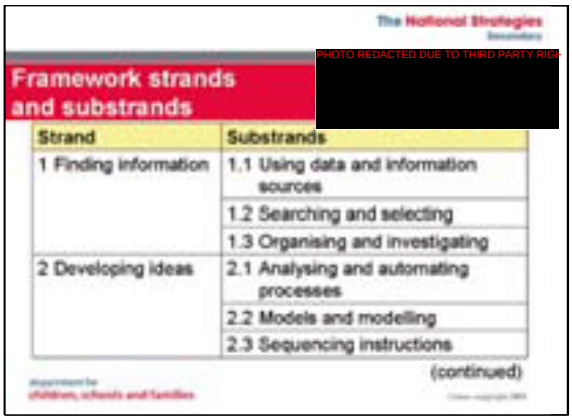

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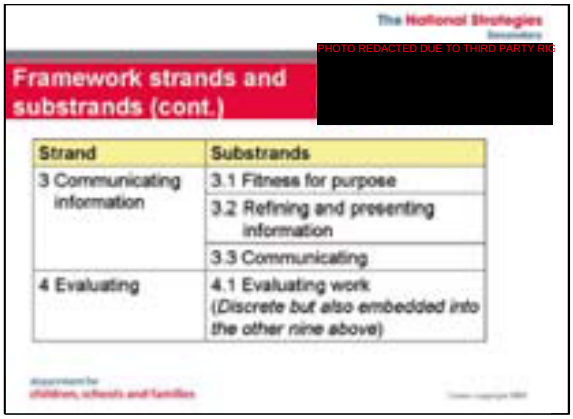

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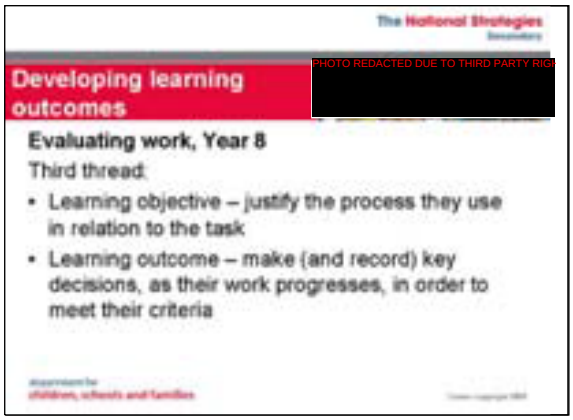

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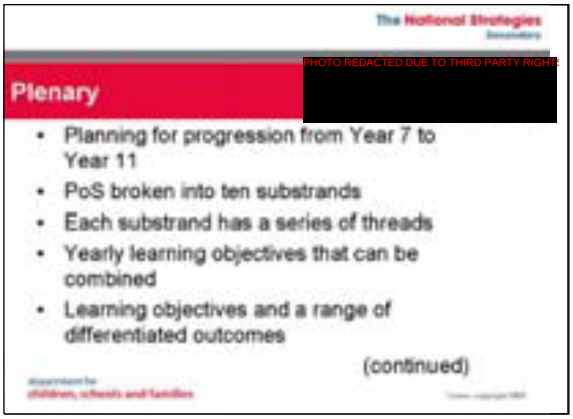

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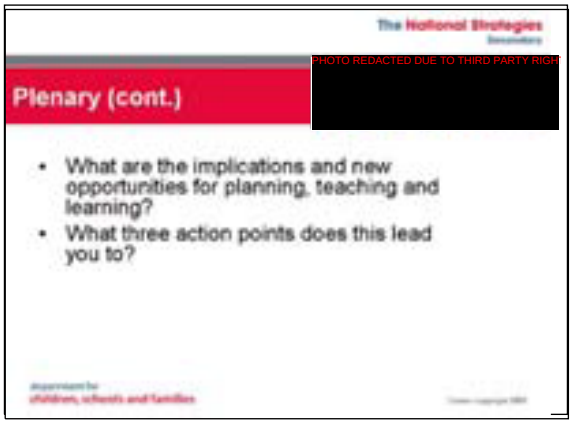

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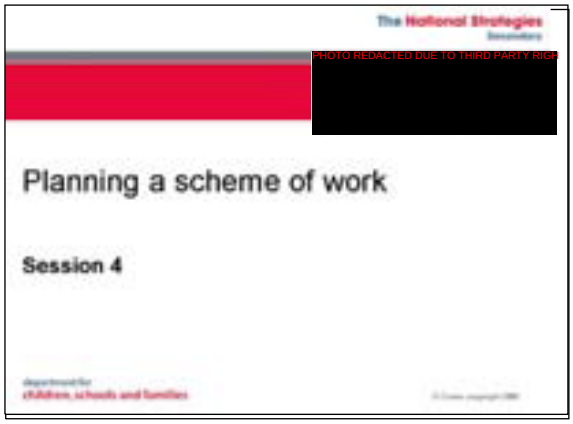
Session 4: Planning a scheme of work

Slide 4.1



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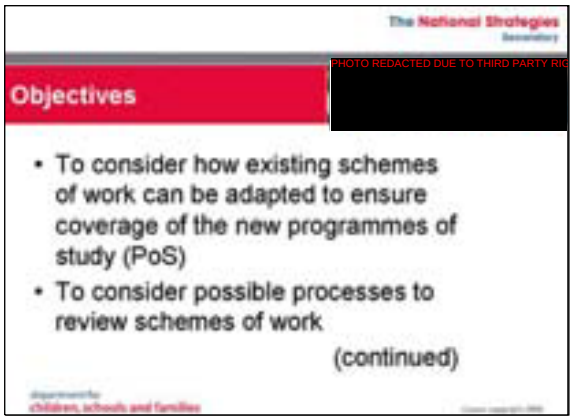

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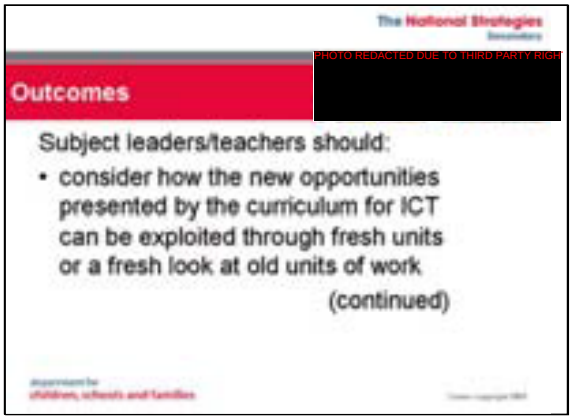

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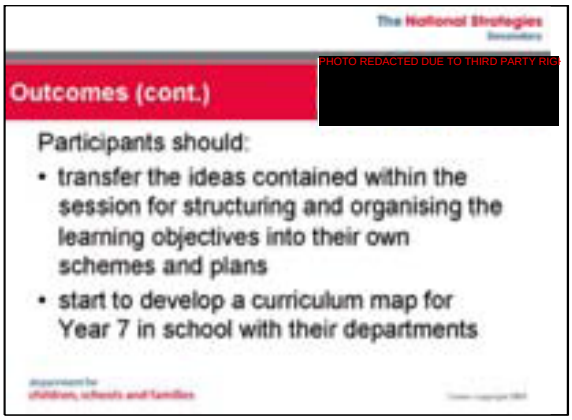

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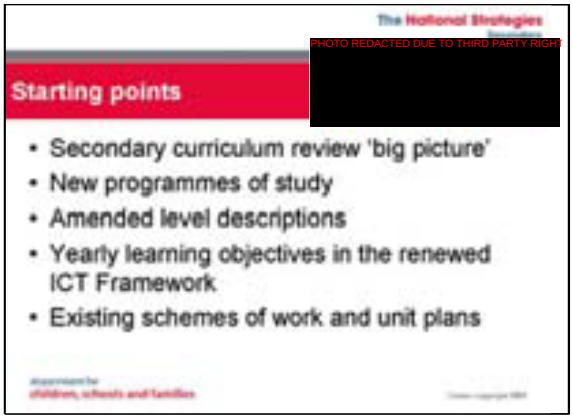

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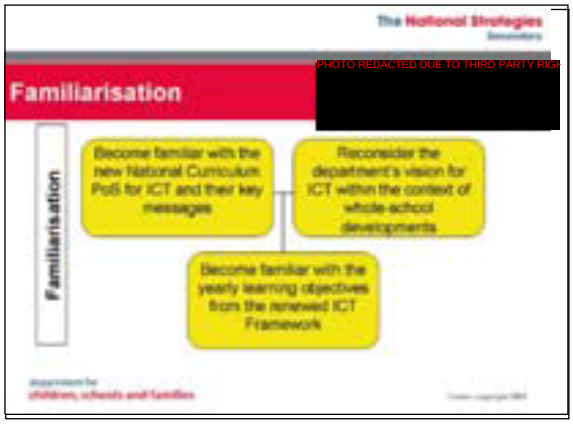

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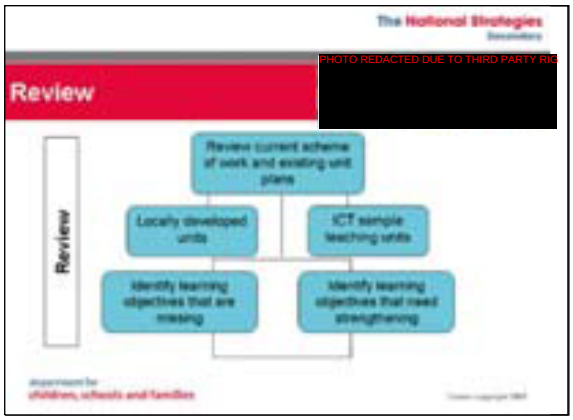

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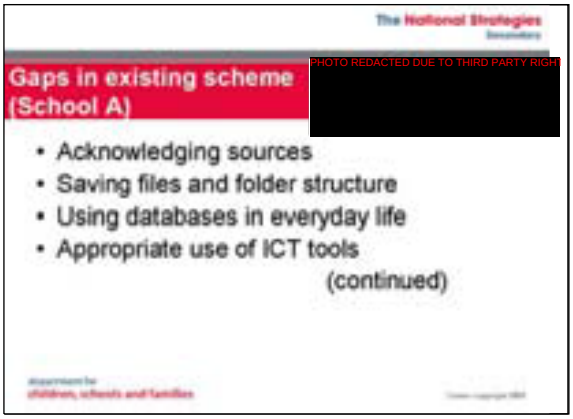

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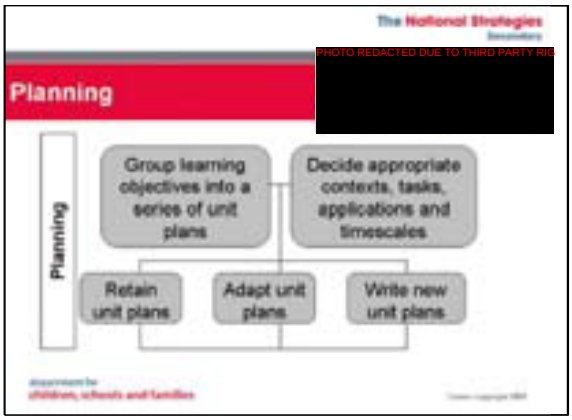

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Slide 4.13

Slide 4.14

Session 2: The new ICT programmes of study: Key Stages 3 and 4

70 minutes

Objectives

- To consider the structure for subjects in the new secondary curriculum
- To outline the main changes to the ICT Key Stage 3 and Key Stage 4 programmes of study
- To raise awareness of the context for the ICT programmes of study within the secondary curriculum review

Outcomes

Subject leaders/teachers should:

- understand the main changes to the ICT programmes of study
- understand the implications for planning and teaching ICT within the wider context of the secondary curriculum review.

Resources

- Handout 2.1: The importance of ICT
- Handout 2.2: Old and new level descriptions
- Handout 2.3: Time line
- Resource 2.1: Differences between attainment target level descriptions
- Programme of study for Key Stage 3
- Programme of study for Key Stage 4

Outline of session

Section/task/activity	Time needed
Introduction to the session	10 minutes
The new programmes of study	40 minutes
Level descriptions	10 minutes
Plenary	10 minutes
	Total: 70 minutes

1 Introduction to the session 10 minutes

Slide 2.1: title slide

Say that this session is an introduction to the new ICT programmes of study and an opportunity to consider some of the implications for planning and teaching ICT capability within the wider context of the secondary curriculum review.

Slides 2.2 and 2.3: Objectives and outcomes

Show the slides and talk through the objectives in relation to the outcomes for the session.

This session will help subject leaders and teachers identify the changes to the curriculum and familiarise them with the style, structure and context of the new programmes of study. This information will set the background for subsequent sessions, which will consider the planning implications for ICT subject leaders and teachers and the contribution of ICT to wider curriculum reforms in individual school contexts.

Slide 2.4: ICT – the wider context

Show the slide and point out that the secondary curriculum review needs to be considered in the light of other reforms and the changing landscape. Make the following points.

- Every Child Matters places an increased emphasis on ensuring that all young people maximise their potential in five key areas. ICT has a significant part to play in 'enjoy and achieve' and 'economic well-being', as well as contributing to 'citizenship' and 'staying safe'.
- The 14–19 reforms are providing different pathways for all young people to maximise their potential. These include new qualifications such as diplomas and functional skills, as well as other reforms such as the expansion of apprenticeships.
- The secondary curriculum review gives the opportunity to align teaching and learning at Key Stage 3 and Key Stage 4 with the key aims of Every Child Matters and the 11–19 reform agenda.

Slide 2.5: Curriculum aims

This slide gives a reminder of the shared curriculum aims of all subjects. All programmes of study, whatever the subject, begin with the aims of developing successful learners, confident individuals and responsible citizens, and so provide a common focus on good learning in school and beyond.

The process of learning through undertaking activities in ICT should contribute to achievement of these curriculum aims.

Ask subject leaders/teachers to consider the role of their subject in contributing to:

- the wider context – Every Child Matters, 11–19 reforms and the changing landscape
- shared curriculum aims.

Take brief feedback before introducing the next section, which looks in detail at the structure and content of the new programmes of study, starting with the importance statement.

2 The new programmes of study 40 minutes

Slide 2.6: ICT PoS – structure

Show the slide and remind subject leaders/teachers that:

- the new programmes of study for different subjects have been developed as part of the secondary curriculum review
- the structure of the programmes of study is the same for all subjects
- some subjects have less prescribed content to allow greater flexibility, although this is not such an issue for ICT, where the subject focuses largely on capability and process rather than content
- the new curriculum balances subject knowledge with the key concepts and key processes that underpin the discipline of each subject.

Outline or recap the structure of all programmes of study, pointing out the various sections as follows.

- Curriculum aims – are the same for all subjects.
- Importance statement – describes why the subject matters and how it can contribute to the aims.
- 1. Key concepts – identify the big ideas that underpin the subject.
- 2. Key processes – identify the essential skills of the subject.
- 3. Range and content – outline the breadth of subject matter from which teachers should draw to develop knowledge, concepts and skills.
- 4. Curriculum opportunities – identify opportunities to enhance and enrich learning, including making links to the wider curriculum.
- Attainment targets – as before, with level descriptions from level 4 to level 8/exceptional performance.

Slide 2.7: A new look at subjects

Show the slide, which gives a diagrammatic summary of the new structure of the programmes of study. Because the structure is common to all subjects, it potentially presents more opportunities for making links between the subjects and enabling the development of more coherent learning experiences across the curriculum.

The visual representation as a circle is significant in that the separate elements need to be seen as integrated for planning, teaching and learning, in order to achieve compelling learning experiences for all young people, both within and across subjects.

The various elements that make up the programmes of study will now be considered in detail.

Ask subject leaders/teachers to locate the ICT programmes of study for Key Stage 3 or Key Stage 4. If you have an internet connection, you may want to share the on-screen version on the National Curriculum website at http://curriculum.qca.org.uk/subjects/ict/index.aspx.

Quickly walk through one of the programmes of study, pointing out the various sections that were outlined in the previous slides.

Now focus on the importance statement, which is also available as **handout 2.1: The importance of ICT.**

Activity 1: Importance statement

Ask subject leaders/teachers to highlight on **handout 2.1** what they consider to be the most important aspects of the statement.

- What are the key points that are significant for all learners?
- Why does the subject matter?
- How does the subject contribute to the three curriculum aims discussed earlier?

Give subject leaders/teachers 5 minutes to undertake this task, and then take feedback focused on the three curriculum aims, which are to create:

- successful learners who enjoy learning, make progress and achieve
- confident individuals who are able to live safe, healthy and fulfilling lives
- responsible citizens who make a positive contribution to society.

Slides 2.8 and 2.9: The importance of ICT

Take feedback and show these slides, which summarise some of the main points from the importance statement, to focus the responses. These slides select some key phrases which highlight how ICT contributes to the development of young people, as expressed in the aims. The messages in the statement also resonate with key messages from Every Child Matters and the 14–19 reforms (for example, participation in society, employability, collaboration and exchange of information).

Slide 2.10: Key concepts

This slide lists the five key concepts that underpin the study of ICT. Pupils need to understand these concepts in order to deepen and broaden their knowledge, skills and understanding of the subject.

Allow 5 minutes for subject leaders/teachers to locate and familiarise themselves with the key concepts section in either the Key Stage 3 or Key Stage 4 ICT programme of study.

Note:
You may need to clarify a change in terminology. The new programmes of study use the term 'key concepts' across all subjects for a specific purpose, as described above. The term 'key concepts' was previously used in the original Key Stage 3 Strategy ICT Framework to label components of each of the strands within the programmes of study. To avoid confusion, these are called substrands in the renewed ICT Framework, which will be further explored in session 3.

In small groups (if applicable), discuss how the statements under each of the key concepts reflect the curriculum aims for young people to become successful learners, confident individuals and responsible citizens.

The example below highlights key phrases that can be used to exemplify the relationship between the aims and the key concepts. Emphasise particularly the focus on real-world relevance and social, moral and ethical implications. Note the references to process, skills and knowledge, and the application of ICT beyond the classroom.

Capability

a Using a range of ICT tools in a purposeful way to **tackle questions**, **solve problems** and create ideas and solutions of value

b **Exploring and using new ICT tools** as they become available

c Applying ICT learning in a **range of contexts** and in other **areas of learning, work and life**

Communication and collaboration

a Exploring the ways that ICT can be used to **communicate, collaborate and share ideas on a global scale**, allowing people to work together in new ways and changing the way in which **knowledge is created**

Exploring ideas and manipulating information

a **Solving problems** creatively by using ICT to explore ideas and try alternatives

b Using ICT to model **different scenarios, identifying patterns and testing hypotheses**

c Manipulating information and **processing large quantities of data efficiently**

Impact of technology

a Exploring how ICT changes the way we live our lives and has significant **social, ethical and cultural** implications

b Recognising issues of **risk, safety and responsibility** surrounding the use of ICT

Critical evaluation

a Recognising that information must not be taken at face value, but must be **analysed and evaluated** to take account of its purpose, author, currency and context

b **Reviewing and reflecting** critically on what they and others produce using ICT

Slide 2.11: Key processes

This slide lists the four key processes that describe the essential skills and processes in ICT that pupils need to learn to make progress.

Ask subject leaders/teachers to locate the detailed section on key processes for both the Key Stage 3 and Key Stage 4 ICT programmes of study, pointing out that there are differences in content between the key stages to reflect progression. Much of the content of this section may appear familiar, but there are significant changes and emphases that need to be understood within the wider context of the subject and the whole curriculum.

Where possible, share out sections of the key processes so that groups are able to work together in pairs on one of the four sections. Ask subject leaders/teachers to read through the detail of the section in order to identify:

- areas that are familiar and those that are new
- areas that have a greater emphasis than before
- differences between Key Stage 3 and Key Stage 4.

This section should be read alongside, and in the context of, the previously considered key concepts section (the concepts that underpin the study of ICT).

Each pair should record their responses to the above three points on a flip chart. After 5 minutes, pause the activity and move to the next slide.

Slide 2.12: Range and content

Show the slide and ask subject leaders/teachers to locate the range and content section.

Point out that the range and content section is different at Key Stage 3 and Key Stage 4 to reflect progression in the subject. This section outlines the breadth of the subject on which teachers should draw when teaching the key concepts and key processes.

Some points to highlight (from the Key Stage 3 and Key Stage 4 explanatory notes).

- Software applications – including multimedia, image/sound manipulation, graphics
- Organisation, storage and access – clear links here with functional skills 'use ICT systems' (e.g. file names, classifying folders, passwords, backups)
- Variety of contexts – application of knowledge, skills and understanding to a range of problems, including those in other areas of learning
- Safe working practices – again clear links here with functional skills 'use ICT systems' (e.g. arranging hardware and cables safely, using wrist rests and other devices)
- Security of information – including emphasis on, for example, identity theft
- Impact of ICT – including emphasis on, for example, plagiarism, effect on employment, implications of unequal access and cyber-bullying

Ask subject leaders/teachers to resume the flip chart activity on **key processes**, but now within the context of both the **key concepts** and the **range and content** sections of the programmes of study (Key Stage 3 and Key Stage 4).

Allow another 5–10 minutes to complete the activity, before taking feedback from the group.

Slides 2.13 and 2.14: Changes to the PoS content

Show the slides, which summarise some of the main changes to the content of the programmes of study. Make the points shown below and pick up any points that have not been raised in the feedback.

- The new curriculum has been updated to reflect new technologies and developments in ICT including, for example, specific reference to:
  - safe working practices and e-safety
  - the use of ICT to support collaboration, especially using ICT to exchange information and support collaborative working.
- In addition, there are some specific changes to content, for example:
  - explicit references to aspects of control have been removed and a greater emphasis given to sequencing instructions
  - explicit references to measuring and monitoring external events have been removed
  - the programmes of study for ICT embed the knowledge, skills and understanding necessary to develop ICT functional skills.

- There is an emphasis on some aspects which will have an impact on planning across all areas, for example:
  - using ICT purposefully to solve problems in real-life contexts
  - manipulating and processing large quantities of data efficiently
  - understanding the social, ethical, legal and economic implications of the use of ICT
  - using ICT to support independent learning
  - contribution of ICT to the wider curriculum review and compelling learning experiences across the curriculum.

Slide 2.15: Curriculum opportunities

Show the slide and ask subject leaders/teachers to locate the curriculum opportunities section in both the Key Stage 3 and Key Stage 4 programmes of study.

A key driver for the new curriculum is the development of compelling learning experiences for pupils, encompassing the key concepts, key processes and range and content of the subject.

The curriculum opportunities section is about providing experiences in purposeful and meaningful contexts which animate teaching and learning for pupils, and so increase pupils' motivation, engagement and participation. Curriculum opportunities are about looking beyond the classroom as well as offering a range of opportunities within it.

Point out the particular emphasis on:

- exploiting technology – discriminating users
- collaborative working – including communities of learners
- real-world situations – using contexts outside the school environment
- advanced and new ICT tools – awareness and use of new and emerging technologies.

The curriculum opportunities section also includes working with other subjects, and so complements the key concepts in the drive for making links in learning across the curriculum. There are clear implications for teachers' planning, which will be considered later.

Slide 2.16: Changes to the PoS structure

Conclude this part of the session by comparing the structure of the new programmes of study with the previous version. Make the following points.

- Structure has changed, but ICT capability remains key.
- Knowledge, skills and understanding is contained within the key concepts and key processes.
- Breadth of study is contained within the range and content and curriculum opportunities.

Reiterate that the wider picture of change is understood within the context of the secondary curriculum review. Highlight how this change is within the context of the changes mentioned at the start of the session – change of approach, creativity, flexibility and personalisation.

3 Level descriptions 10 minutes

Say that just as there have been some modifications to the programmes of study, so too have level descriptions been modified to reflect changes in content.

Refer subject leaders/teachers to **handout 2.2: Old and new level descriptions**, showing both the old and the new level descriptions. Ask subject leaders/teachers to highlight the differences between the old and new descriptions and to consider why the changes have been introduced. You may find it useful to divide the levels between pairs. Allow 10 minutes before taking feedback.

Use **resource 2.1: Differences between attainment target level descriptions** to support the comparison and identification of differences. You may want to draw out some examples from the level descriptions during feedback or as a stimulus for discussion, for example:

- Rationalisation to avoid duplication with other subjects, e.g. removal of reference to sensors from level 5
- Explicit incorporation of the 'key characteristics' of each level, e.g. level 5 , fitness for purpose; level 6, automation and efficiency; level 7, scoping
- Incorporation of established 'good practice' and commonly recognised level markers, e.g. use of audience feedback; file handling; e-portfolios
- Technological change, e.g. replacement of 'using email' with 'using digital technologies'
- E-safety, e.g. in level 5 'use ICT in a safe … manner'

Slide 2.17: Attainment target and level descriptions

Show the slide to conclude this part of the session. Explain that some minor amendments have been made to the attainment target level descriptions to recognise the changes to the programmes of study but, importantly, the standards have not changed.

Make the following points.

- The standards remain the same. Although level descriptions have been modified, the standard required to achieve a particular level remains the same.
- The key characteristics, previously published as non-statutory guidance, are now embedded in the level descriptions.
- There is a stronger emphasis on sequences. Control has been modified and the explicit reference to sensing has been removed. Though control applications are still valid, there is greater flexibility to open up other contexts requiring the use of sequencing instructions.
- There is a greater emphasis on large data sets, Every Child Matters and e-safety.

4 Plenary 10 minutes

Slide 2.18: Plenary

The session concludes with a chance to share views on the new programmes of study and the key messages, focused with two questions:

- What other changes would you identify as significant?
- What new opportunities do the changes offer for planning, teaching and learning ICT? Choose one or two examples to discuss.

Distribute **handout 2.3: Time line**. Say that this gives a broad time line for implementation of the new curriculum.

Implementation begins for Year 7 in September 2008, although departments may wish to consider some changes for Year 8 also, in view of the new GCSEs and functional skills which are offered in 2010.

Conclude with the message that, within what is a gradual process, departments control the extent of developments in the context of the learning needs of their pupils.

Slide 2.19: And finally…

Return to the bigger picture. Recap that any change is about disciplined innovation driven by the three questions introduced at the beginning of the day:

- What are we trying to achieve?
- How do we organise learning?
- How well are we achieving our aims?

This session has broadly considered the first question by exploring the aims and direction of the new programmes of study. In summary, the changes provide curricular flexibility and choice within a statutory framework of entitlement in order to increase engagement, motivation and progress and so improve standards and participation for all. This new and flexible curriculum is reflected in a renewed Framework for ICT.

Say that the second question will be addressed by examining the role of the renewed Framework in helping to organise learning, which is the focus for session 3.

Session 3: Introducing the renewed Framework for secondary ICT

75 minutes

Objectives

- To introduce the renewed Secondary Framework for ICT
- To consider progression in ICT from Year 7 to Year 11
- To show how the ICT Framework can be used to support planning, teaching and learning

Outcomes

Subject leaders/teachers should:

- be familiar with the renewed Secondary Framework for ICT
- understand how the programmes of study relate to lines of progression within learning objectives
- understand how the ICT Framework supports planning, teaching and learning.

Resources

- Handout 3.1: Substrand 3.3 Communicating
- Handout 3.2: Blank progression template
- Handout 3.3: Substrand 4.1 Evaluating work
- Handouts 3.4a–e: Suggested learning outcomes (as separate A3 handouts)
- Resource 3.1: Progression in 'Communicating'
- Resource 3.2: Learning objectives for 'Sequencing instructions' (cut up and put in envelope)
- Resource 3.3: Progression in 'Sequencing instructions'
- Lines of progression in ICT
  - Overview of strands
  - Learning objectives

Outline of session

Section/task/activity	Time needed
Introduction	15 minutes
Progression within a substrand	20 minutes
Exploring threads within a substrand	35 minutes
Plenary	5 minutes
	Total: 75 minutes

1 Introduction 15 minutes

Slide 3.1: title slide

Say that this session will give subject leaders/teachers an opportunity to explore the renewed ICT Framework and how it supports planning, teaching and learning of ICT. In particular, the session will focus on lines of progression through ICT learning objectives and their relationship to the programmes of study.

Slides 3.2 and 3.3: Objectives and Outcomes

Show subject leaders/teachers the objectives and outcomes on the slides.

Point out that the Framework is a **renewed** (not new) ICT Framework.

The renewed ICT Framework builds on the *Framework for teaching ICT capability: Years 7, 8 and 9* (2002). The renewed ICT Framework has been developed to reflect the secondary curriculum review and the new ICT programmes of study, and to provide practical advice on planning, teaching and learning of ICT.

A key focus of the renewed Framework is on progression in learning. Yearly learning objectives have been developed to support pupils' progression from Year 7 to Year 11.

Explain that the activities within session 3 will enable subject leaders/teachers to engage with the Framework, using the resources provided, and specifically to work with the learning objectives to review progression in learning.

The key messages are as follows.

- The **renewed** Framework is an **opportunity** for consolidating and extending good practice, informing professional thinking and dialogue, and reflecting on and enhancing pupil and professional learning, and so raising standards.
- The renewed Framework **addresses the programmes of study** by embedding the **key concepts and processes**.
- The renewed Framework is designed to be **flexible** to allow teachers to **adapt** it to their own priorities in teaching and learning.
- The emphasis in using the Framework is not on **coverage**, but on **progression** through selecting, combining and highlighting objectives based on the learning needs of pupils.
- Implementing the renewed Framework is a **manageable undertaking**, which will have positive outcomes for pupils, teachers, subject and senior leaders, and the school as a whole.
- Using the renewed Framework is **not about assimilating it into what has always been done**, but **neither is it about a complete revision** of learning and teaching: the Framework is **renewed not new**.

Slide 3.4: Renewed Framework – key features

The renewed ICT Framework is designed to increase pupils' access to excellent teaching and engaging, purposeful learning that will enable them to make good progress through Key Stage 3 and Key Stage 4.

The rationale behind renewing the ICT Framework includes the desire to:

- reflect the revised ICT programmes of study following the secondary curriculum review 2007
- extend the current ICT Framework into Key Stage 4 and promote progression through the key stages
- re-energise the ICT Framework as a web-based planning resource linked directly to relevant strategy and other resources.

Emphasise that the development of the Framework is a phased process and will be rolled out over the coming terms. The first phase focuses on the development of:

- learning objectives for Years 7 to 11
- four strands with ten substrands of progression in the subject
- an electronic format to support flexible planning
- supporting guidance.

The first phase of the web-based version will be released in the summer term; however, if you are using this training before the release, the CD-ROM (if available) provides a preview of some of the assets that will be found on the web. Spend 5 minutes demonstrating the assets on the CD-ROM, in particular the yearly learning objectives.

Slides 3.5 and 3.6: Framework strands and substrands

These slides show the way in which the Framework breaks down the ICT programmes of study into four strands (the four key processes) and ten substrands.

The ten substrands are then broken down into ten sets of yearly learning objectives, which exemplify the coverage of the programmes of study for ICT at Key Stages 3 and 4 in the light of the secondary curriculum review, providing clear lines of progression from Year 7 to Year 11, with extension opportunities in Year 11.

Explain the main changes from the structure in the original Key Stage 3 ICT Framework, which focused on nine 'key concepts' and evaluation embedded throughout.

- Programmes of study are broken down into ten substrands.
- 'Evaluating work' is now a separate substrand.
- 'Control and monitoring' has changed to 'Sequencing instructions'.
- Many of the other headings of the nine substrands will look familiar, although the content has changed to reflect the new programmes of study.
- Each substrand shows lines of progression in learning objectives (rather than teaching objectives).

Learning objectives extend into Key Stage 4 and show progression from Year 7 to Year 11, with Year 11 extension objectives for pupils working at A/A* level or equivalent.

Notes:
The four strands have been developed directly from the four key processes. Other subjects have not always linked their strands directly to the key processes. This reflects the different nature of subjects and their need to focus progression on different aspects of the programmes of study. Some subjects, for example science, have considerably more content to deal with than ICT, which is predominantly a process-driven subject.

The new programmes of study now use the term 'key concepts' across all subjects for a specific purpose, as described in the previous session. The term 'key concepts' was previously used in the original Key Stage 3 Strategy ICT Framework to label components of each of the strands within the old programmes of study. To avoid confusion, these are called substrands in the renewed ICT Framework.

2 Progression within a substrand 20 minutes

Slide 3.7: Yearly learning objectives

Show subject leaders/teachers the slide, which details the yearly learning objectives in one of the substrands. Explain that this is a section from the 'Searching and selecting' substrand and shows the progression in learning objectives from Year 7 to Year 11 (including extension objectives). Explain that there are three further rows (or threads) of progression for this substrand, but that only two rows are shown on the slide.

Also explain the following points.

- The progression is from Year 7 to Year 11 extension objectives. Year 11 extension objectives are included to indicate the degree of additional learning for those pupils working at exceptional performance and GCSE A* equivalence. These extension objectives provide further challenge to support the transition to post-16 education.
- The yearly learning objectives are described under default years relating to national expectations. Subject leaders and teachers will need to make an informed judgement about whether to use the learning objectives from the default, previous or subsequent year for some or all of their pupils.
- Each strand and substrand describes the progression in pupils' learning from Year 7 through to Year 11. The learning objectives are set out year by year to enable teachers to plan sequences of lessons that cluster objectives together from different areas of the programmes of study into engaging, powerful learning experiences.
- Although the Framework grids divide the learning experiences into specific years, they should not be seen as atomised in any way. The programmes of study have been deconstructed to exemplify one way of showing different lines of progression in learning objectives to assist planning. The process of reconstructing the learning objectives into a coherent scheme of work – by grouping the objectives and aligning them to appropriate context, activities and resources – is key to successful planning. The Framework progression grids provide a series of scaffolds for this.
- The yearly learning objectives will provide departments, subject leaders and teachers with a tool to be used when planning schemes of work. By planning against the identified learning objectives in ICT, the coverage of the programmes of study and an appropriate pace of progression will be ensured.

- Within the substrands, further threads can be identified. For example, on the slide, separate threads focus around selecting information and framing searches.
- Not all threads run throughout Year 7 to Year 11.

Explain that three of the substrands will now be explored to begin to understand how the substrands support progression.

Activity 1 (10 minutes)

Within this activity, subject leaders/teachers are asked to identify the key words that suggest progression in a substrand. Ask subject leaders/teachers to locate **handout 3.1: Substrand 3.3 Communicating**, which shows learning objectives from Year 7 to Year 11 extension in the 'Communicating' substrand. Ask them to use a highlighter to indicate the words which give a sense of progression.

After 8 minutes, talk through the words that participants have highlighted on the progression grids, using **resource 3.1: Progression in 'Communicating'** (with emboldened words) as a reference.

You may ask the question: Which words are expected and which words are new?

Activity 2 (10 minutes)

This activity focuses on substrand 2.3, 'Sequencing instructions'.

Cut up the learning objectives from **resource 3.2: Learning objectives for 'Sequencing instructions'** and put them into an envelope. You should either:

- cut off the 'Year' headings and then cut the objectives into columns so that all the learning objectives for a year across a number of threads are together

or:

- cut up just one row of objectives from a single thread.

This will speed up the process of ordering.

Subject leaders/teachers should work in groups of two or three if possible.

Ask subject leaders/teachers to order the learning objectives from Year 7 to Year 11 extension for the 'Sequencing instructions' substrand. As with progression in 'Searching and selecting' (on slide 3.7), there will be threads.

Direct subject leaders/teachers to **handout 3.2: Blank progression template** and the appropriate envelope, and ask them to place the learning objectives on the handout in order of progression, so the simpler objectives are on the left, progressing to the more difficult objectives on the right.

After 8 minutes, talk through the progression map using **resource 3.3: Progression in 'Sequencing instructions'** (with emboldened words) as a reference.

Take feedback and pick up any points arising from the feedback.

Say that the planning tool on the electronic Framework will allow subject leaders/subject teachers to group learning objectives from different substrands to devise unit plans and create a curriculum map for a given year group. This will be discussed further in the next session.

3 Exploring threads within a substrand 35 minutes

Activity 3: Threads and outcomes within 'Evaluating work'

Within this activity, subject leaders/teachers will begin to explore a third substrand – 'Evaluating work'.

Explain that, although the 'Evaluating work' substrand is shown in a separate progression grid, it will need to be embedded and progressed throughout much of the work of the other substrands.

This is a three-part activity.

Part 1 (5 minutes)

Direct subject leaders/teachers to **handout 3.3: Substrand 4.1 Evaluating work** and say that they have 5 minutes for the first part of this activity.

Explain that the 'Evaluating work' substrand has five threads of progression. Ask subject leaders/teachers to review the thread within each horizontal set of yearly learning objectives and record on the handout what they think the progression specifically encapsulates.

After 5 minutes, take feedback, ensuring that threads similar to those shown below are drawn out (thread headings are indicative only):

- **evaluating tools** – how the use of ICT tools can support the evaluation of work
- **success criteria** – how success criteria form a tool to enable pupils to focus on the areas of work that need improving
- **evaluating their approach** – how using evaluation throughout the process of developing work can support improvements
- **feedback** – how feedback from others can support improvements
- **reflecting on learning** – how using prior learning can support improvements.

Part 2 (15 minutes)

Now ask subject leaders/teachers, in pairs at a table, to spend 10 minutes discussing each thread further.

Participants should then undertake 'red, amber, green' analysis on each of the threads to identify those already covered in their existing schemes of work across Key Stage 3 and Key Stage 4. Ask subject leaders/teachers to arrive at a consensus on the coverage of the threads across the range of Key Stage 3 and Key Stage 4 courses.

- **Green** – participants are sure that the thread is covered and could identify evidence (specific learning outcomes) at either Key Stage 3 or Key Stage 4 that pupils have succeeded or not succeeded against the objective.
- **Amber** – participants believe pupils do have opportunities to cover this area, but could not point to any specific learning outcomes.
- **Red** – participants do not think this is covered within the current scheme of work.

There may be some discussion here around examination courses; however, stress that whichever course is chosen, the programmes of study for ICT are statutory.

After 10 minutes, gather feedback. It is likely that both 'reflecting on learning' and 'evaluating your approaches' will cause the greatest challenge in existing schemes of work.

Allow 5 minutes for discussion.

Part 3 (15 minutes)

Slide 3.8: Developing learning outcomes

This slide focuses on the third thread in the 'Evaluating work' substrand. This thread focuses around 'evaluating their approach'.

The slide shows one of the Year 8 learning objectives and a possible learning outcome that would demonstrate that the learning objective had been achieved. Ask subject leaders/teachers what other examples of learning outcomes might be appropriate, and in what context.

Divide subject leaders/teachers into groups so that each group focuses on one of the threads in the 'Evaluating work' substrand. In particular, focus on threads that were classified as red or amber in the previous activity. Ask participants to identify either broad or specific learning outcomes they could look for in order to check pupils' success against each of the learning objectives.

Using **handouts 3.4a–e: Suggested learning outcomes** (as separate A3 handouts), subject leaders/teachers should record their suggested outcomes below each learning objective. Alternatively, they could record outcomes electronically. Each group should complete only one of the sheets. Allow 10 minutes for this activity.

Then allow 5 minutes to close the activity and share some of the learning outcomes. Display the completed sheets electronically or position them around the room.

Explain that, when planning a scheme of work, it is vital that subject leaders/teachers identify clear and relevant learning outcomes in order to measure and check the success of each objective and convey a sense of progression for pupils.

Some departments may want to refer directly to their strategies for Assessment for learning, for example use of WALT (we are learning to) and WILF (what I'm looking for) statements to represent learning objectives and learning outcomes.

4 Plenary 5 minutes

Slides 3.9 and 3.10: Plenary

Conclude by recapping some of the main points of the session, as shown on the slides.

Ask subject leaders/teachers:

- What are the implications and new opportunities for planning, teaching and learning?
- What three action points does this lead you to?

Emphasise once again the manageability of the process and how the planning tool and lines of progression will aid planning for personalisation. The introduction of the programmes of study and roll-out of the renewed Framework are phased – they are evolutions, not revolutions, and much will depend on the school's approach to wider curriculum development.

Refer briefly to the Lines of progression in ICT and the set of ten grids of learning objectives. Say that the next session will focus on using these grids to support the planning of a Year 7 scheme of work.

Slide 3.11: And finally…

Return to the bigger picture. Reiterate the message that change is about disciplined innovation driven by the three questions introduced at the beginning of the day:

- What are we trying to achieve?
- How do we organise learning?
- How well are we achieving our aims?

This session has broadly considered the second question by examining the role of the renewed Framework in helping to organise learning.

In session 4, the second question will be developed further, and aspects of the third question will be addressed by considering the implications for planning and how to decide the extent and pace of change.

Session 4: Planning a scheme of work

90 minutes

Objectives

- To consider how existing schemes of work can be adapted to ensure coverage of the new programmes of study
- To consider possible processes to review schemes of work
- To have an opportunity to explore possible combinations of learning objectives to develop units of work and a curriculum map for Year 7 delivery in September 2008

Outcomes

Subject leaders/teachers should:

- consider how the new opportunities presented by the curriculum for ICT can be exploited through fresh units or a fresh look at old units of work
- transfer the ideas contained within the session for structuring and organising the learning objectives into their own schemes and plans
- start to develop a curriculum map for Year 7 in school with their departments

Resources

- Handout 4.1: Planning flow chart
- Handout 4.2: Year 7 learning objectives (as separate A3 handout)
- Handout 4.3: Year 7 learning objectives (blank) (as separate A3 handout)
- Handout 4.4: School B unit summaries
- Handout 4.5: Sample teaching unit overview with additional opportunities
- Handout 4.6: Blank curriculum map (as separate A3 handout)
- Handout 4.7: Action plan – Year 7 curriculum 2008
- Resource 4.1: Sample teaching unit curriculum map
- Resource 4.2: School B curriculum map
- Resource 4.3: Year 7 learning objectives example
- Resource 4.4: Year 7 learning objectives planning
- Resource 4.5: Example 2 School B curriculum map
- Resource 4.6: Curriculum map and time line for adapted STUs
- Resource 4.7: Curriculum map and time line for School B STUs

Outline of session

Section/task/activity	Time needed
Introduction to the session	5 minutes
The planning process	70 minutes
Plenary	15 minutes
	Total: 90 minutes

1 Introduction to the session 5 minutes

Slide 4.1: title slide

Say that this session will give ICT subject leader/teachers an opportunity to look at the renewed Framework of yearly learning objectives and their existing schemes of work in order to consider processes for adapting current schemes of work or producing a new one.

Slides 4.2 and 4.3: Objectives

Show subject leaders/teachers the objectives. The session will focus on how learning objectives can be combined into units of work which then, with other content, are combined to form a curriculum map for Year 7 pupils in September 2008.

Slides 4.4 and 4.5: Outcomes

Show subject leaders/teachers the outcomes and make links to the objectives, reminding subject leaders/teachers to record actions against these outcomes as the session progresses – for example, the process of reviewing their own scheme of work.

During the session, participants will first model an example scheme of work and then map their own units of work against the renewed Framework ICT yearly learning objectives, to engage in the process of planning a scheme of work. During the process, participants will identify the areas that require reviewing and strengthening, and will consider carrying out this process with their departments.

2 The planning process 70 minutes

Slide 4.6: Starting points

Allow 5 minutes to introduce the planning process, as outlined below.

Remind subject leaders/teachers that in the previous three sessions they have looked at:

- the secondary curriculum review 'big picture'
- the new programmes of study and level descriptions for ICT
- an overview of the yearly learning objectives in the renewed ICT Framework
- the yearly learning objectives for three of the substrands in more depth ('Communicating', 'Sequencing instructions' and 'Evaluating work').

Reassure subject leaders/teachers that this is not a process of throwing away all the hard work on schemes of work and teaching units in their schools. Schools will have a scheme of work and unit plans written to ensure coverage of the current programmes of study. They may be using the Secondary National Strategy sample teaching units that they have adapted, they may have completely new unit plans, or may be using a mixture of both, but they are unlikely to be starting from scratch. This process should ensure that schools build on those approaches that are proven to work.

Participants will work through the process of reviewing and adapting an existing scheme of work. Direct subject leaders/teachers to **handout 4.1: Planning flow chart**, which will be referred to throughout the session.

Refer to the handout as you talk through an overview of the four sections of the planning process.

- **Familiarisation** is the first stage, and comprises getting to know the new programmes of study and the key messages – the importance of ICT, the changes to existing sequences, acknowledging and establishing the department's vision, and getting to know the renewed Framework for ICT, including the yearly learning objectives.
- The next stage is the **Review** of the current scheme of work being used by the department. Every department has a scheme of work made up of unit plans. Reviewing these against the yearly learning objectives will identify areas which need strengthening.
- The **Planning** stage involves grouping learning objectives into a series of unit plans. Decisions made at this stage will depend on the capacity to make substantial changes, or whether subject leaders/teachers think it is important to retain as many of the existing units as possible due to staff changes or numbers of non-specialists who are just getting to grips with the existing scheme. This is an opportunity to reflect on developing technologies as well as pupils' capabilities as they start Year 7, and to consider changes of context to reflect pupils' interests or local developments, for example.
- Finally, you need to **Pull it all together** to ensure that your units fit into a sensible sequence of learning, including periodic assessment and a time plan that fits within the school calendar. This is also an opportunity to consider whether the scheme of work and the unit plans within it reflect the diverse abilities and needs of pupils and offer opportunities to achieve at an appropriate level.

Each of the four stages on the flowchart will be explored in detail.

Familiarisation stage 5 minutes

Slide 4.7: Familiarisation

Remind subject leaders/teachers that sessions 2 and 3 covered two elements from the first stage of familiarisation – the new programmes of study and the renewed ICT Framework, including the yearly learning objectives.

Highlight the third box in the familiarisation stage – the departmental vision – both to reassure subject leaders/teachers that this area contributes to the uniqueness of their schemes of work, and also to highlight the need for every ICT department to have a vision of what it wants to achieve within its school context. Session 1 looked at the vision behind the secondary curriculum review.

Ask subject leaders/teachers to spend a couple of minutes jotting down five key points which contribute to their school vision and what they feel is unique about that vision. You should ensure that key points go beyond pragmatic statements such as 'introduce DiDA in Year 9', as this is merely an action that contributes to the vision. Subject leaders/teachers should focus on issues such as pupils' enjoyment of ICT, increasing employability, success rates, and so on. Suggestions should also take account of the school context – for example, possible specialism, model of curriculum design and locality.

Share these key points among the tables.

Review stage 20 minutes

Slides 4.8–4.10

Slide 4.8: Review

This section looks at existing unit plans and using the yearly learning objectives in the renewed ICT Framework to check which learning objectives are covered by existing units in participants' schemes of work. Model the process that might be undertaken to do this as follows.

Ask subject leaders/teachers to look at **handout 4.2: Year 7 Learning objectives** (as separate A3 handout or displayed on screen). This shows the Year 7 learning objectives for all substrands. Each thread within a substrand has been given a number to identify it (e.g. 1.2 Searching and selecting 2).

Tell the story of School A. It has been using the Secondary National Strategy sample teaching units with almost no adaptation since the units were first published. Before changing everything, the school decided to check its units against the Year 7 learning objectives.

Use **resource 4.1: Sample teaching unit curriculum map**. This is an example of how a subject leader/teacher reviewed the sample teaching units to map coverage of the learning objectives.

Take a well known unit, such as sample teaching unit 7.1 (or one of your choice which you will use throughout the session), and scroll down the spreadsheet to show how the subject leader/teacher checked coverage using F to indicate full coverage, P to indicate partial coverage, and O for opportunities when it was thought that some of the areas could easily be covered by adaptation.

Full or partial coverage can only be recorded when the depth of pupils' work within the objectives has been discussed. Full coverage should only be recorded if the learning objective has been taught in some depth so that assessment of pupils' work would show that learning had taken place.

The example school decided that the unit covered the learning objectives in the substrands 'Refining and presenting' 1, 2, 3 and 4, and 'Evaluating work' 1, 2, 3 and 4.

Discuss on tables whether subject leaders/teachers would attribute full or partial coverage to the learning objectives within the chosen sample teaching unit. Point out that all teaching and learning is part of an iterative process, and a learning objective would not be visited only once within a year or key stage.

If time allows, groups could continue with some of the other five sample teaching units for Year 7 – but it is the process that is being modelled rather than a consideration of the sample teaching units. Remind subject leaders/teachers that you are demonstrating a process, and that the outcome will be different for each department that undertakes the process.

Ask subject leaders/teachers to reflect on which of the learning objectives would not be well represented in the present scheme for School A, by skimming through **handout 4.2: Year 7 Learning objectives** and/or showing **resource 4.1: Sample teaching unit curriculum map**. Point out that columns C, D and E on the spreadsheet count the number of times an objective has been covered.

Slides 4.9 and 4.10: Gaps in existing scheme (School A)

Take brief feedback. Use the slides to focus feedback, and discuss any points not raised in the discussion.

Subject leaders and teachers who are delivering the sample teaching units as written should note that some specific areas will not be covered by the materials without adaptation; however, in their own schemes of work, they may have already brought in adaptations to these units – for example, covering the naming of files and folders. This is why the process is important rather than the outcome of the activity, as all schools will need to assess their own schemes of work.

Activity 1 (15 minutes)

Ask subject leaders/teachers to repeat the process modelled above, using their own schemes of work and unit plans. This activity is best undertaken by subject leaders/teachers using their existing Year 7 schemes of work for their own schools.

Note:
If no Year 7 scheme of work is available, use the fictitious School B. The resource **handout 4.4: School B unit summaries** gives an overview of the units taught by the school and can be used to undertake the activity.

Resource 4.2: School B curriculum map shows a possible mapping from the units against the Year 7 learning objectives.

This activity will enable subject leaders/teachers to review learning objectives covered in their existing scheme of work against the renewed ICT Framework yearly learning objectives for Year 7.

Subject leaders/teachers will need **handout 4.3: Year 7 learning objectives (blank)**. This could be used as a handout or electronic copy, and should be extended or adapted to fit the units from the school's scheme of work.

Summarise the session by asking subject leaders/teachers to contribute main headings for areas which are not represented or which are covered only partially. Make comparisons with the list from the review of the Secondary National Strategy sample teaching units in the earlier session.

Conclude with a brief discussion about what subject leaders/teachers might do in their own schools, and about how much adaptation they might need to make. Subject leaders/teachers should try to draw some conclusions about the differences for different schools, depending on how they have already made adaptations to take on board newer technologies, pupils' different capabilities, timetable time and contexts.

Planning stage 25 minutes

Slide 4.11: Planning

Following the review process, using their unit plans, everyone should have an understanding of the coverage of the new programmes of study and the areas that need to be addressed.

The planning process involves looking again at existing units and the learning objectives, reviewing appropriate contexts, tasks, application coverage and time scales, and deciding whether to adapt existing units or write new unit plans.

As an example, **handout 4.5: Sample teaching unit overview with additional opportunities** gives some ideas of how some of the existing sample teaching units could be adapted to ensure coverage of the new programmes of study.

Grouping learning objectives into new unit plans

Use **resource 4.3: Year 7 learning objectives example** to model the process of grouping objectives into unit plans. Use sample teaching unit 7.1 again to start to model the process. Demonstrate the resource as follows.

- Tab 1 (Year 7 objectives) of the workbook has all the Year 7 learning objectives.
- Tab 2 (sample teaching unit 7.1) describes the learning objectives being covered by the existing sample teaching unit and shows that 'Refining and presenting' 1, 2 and 3 and 'Evaluating work' 5 are already in the cells for Unit 1. (Note: during the review process, subject leaders/teachers may already have created an adapted 7.1 which covers different objectives.) Alternatively, this is an opportunity to make changes and select different learning objectives for the first unit.
- Tab 3 (new unit) shows how sample teaching unit 7.1 can be adapted by changing the focus on the learning objectives used.

Example 1 uses the learning objectives from the existing 7.1 sample teaching unit, with the addition of one additional learning objective from the first thread of 'Organising and investigating' to ensure that sensible file naming is introduced at the beginning of Year 7. The second thread of 'Analysing and automating processes' has been selected to include the use of master slides in presentations.

Discuss the two further examples. Draw attention to the different learning objectives selected from the 'Evaluating work' substrand. All areas of 'Evaluating work' need to be developed within the year and across the key stage, but it is important to plan explicitly to develop these skills throughout the units. In examples 1 and 3, the emphasis is on developing the use of criteria to support fitness for purpose. In example 2, the focus is on evaluative explanation in order to progress to justification of choices as a next stage.

In example 3, further changes have been made to the first unit by selecting objectives from the 'Communicating' substrand. The unit could involve pupils making presentations about themselves in order to work with another school and become pupil mentors for the new Year 7 pupils. Various digital media, such as audio or video clips, could be exchanged with feeder schools.

Activity 2 (15 minutes)

Participants should use **resource 4.4: Year 7 learning objectives planning** to begin the process of grouping learning objectives for their own schemes of work.

- Tab 1 (Year 7 objectives) of the workbook has all the Year 7 learning objectives. These can be copied into the second tab (Year 7 unit plan) to create the new scheme of work.
- In tab 2 (Year 7 unit plan), participants can copy each substrand reference and the objective beneath into the boxes to create unit plans. Space for eight objectives is provided, although participants do not need to use all eight spaces. When creating plans, it is important not to concentrate on too many different objectives. A six-week unit is only 6 hours of learning. Space for six units has been provided, although subject leaders/teachers may decide to create four or five units throughout the year.
- Tab 3 (summary) will automatically register when, and how many times, a learning objective has been used. 'Total substrands used' will show when all the objectives have been used. Some objectives will be used more than once throughout the year.

Allow time to begin to use the model to establish which existing unit plans and learning objectives need strengthening.

Some subject leaders/teachers who use the sample teaching units, or closely adapted versions, may want to use **handout 4.5: Sample teaching unit overview with additional opportunities** and **resource 4.1: Sample teaching unit curriculum map** to support their planning.

After 10 minutes, share ideas on the types of units being developed and the various groupings of learning objectives to enable progression in learning.

Note:
For subject leaders/teachers who have been following the School B example, **resource 4.5: Example 2 School B curriculum map** shows a complete map against the school's units. As these units were only recently written, they have already incorporated many of the newer areas of the digital curriculum from the 'Communicating' substrand. The school added an introductory unit to cover using the school network and file management, and a new unit on staying safe.

Emphasise that although the sample teaching units enabled schools a number of years ago to see how the ICT curriculum could be delivered, it is the practices inherent in these units that are important, not the contexts or examples. This is an excellent opportunity to revisit these units and develop them to take account of new technologies, software, contexts and timings. It is important to recognise that schools that choose to continue teaching the sample teaching units as written will probably not be delivering the new curriculum in full without significant adaptations.

Subject leaders/teachers will need to consider how they are going to review or amend their own units or write new ones. This is an excellent opportunity for collaboration between schools that may be at the same stage of development.

Pulling it all together 15 minutes

Slide 4.12: Pulling it all together

The final stage is pulling the work together to form a coherent curriculum plan for Year 7 that the department can implement in September 2008. The unit plans need to be organised to enable the best progression and fit within the school year, taking account of obvious things such as holidays and school events, but also assessment and reporting points that are internal to the department or required by school.

The production of such a map was covered in SLDM 5. Units will also need checking for opportunities to personalise learning for key groups of pupils who might be making more or less progress than the rest of the class.

Show **resource 4.6: Curriculum map and time line for adapted STUs**. This shows how a typical school planned the sample teaching units. Explain that the school has added an introductory lesson to establish the network and safety rules, and has periodic assessment points in line with the school policy. The school delivers the units in the order written.

Reinforce the fact that the curriculum map establishes the sequence of learning. Subject leaders/teachers should consider the appropriate sequence for their pupils. By putting the ordered units on the curriculum map with dates, they also establish a clear plan for teaching across the year.

Activity 3 (10 minutes)

Show **handout 4.6: Blank curriculum map** either as a hard copy or on screen. Ask subject leader/teachers to add their own units to this blank curriculum map.

Encourage subject leaders/teachers to think about the range of activities they would need to add to their unit plans to complete the full year. Are units and assessment the only things affecting the time plan in their schools?

Take brief feedback, ensuring that subject leaders/teachers have allowed for assessment time during the year and specific points for reporting within the school.

Discuss whether it is important to develop some units before others, and the nature of the cyclical curriculum. For example, when developing key processes and concepts, it is important to reintroduce these regularly during the year, so that pupils are continually reinforcing the concepts of fitness for purpose, suitability for audience, and so on. Is it appropriate to consider the use of spreadsheets only once in the year? How might the concept of modelling and planning be reinforced in other ways during the year?

Note:
Resource 4.7: Curriculum map and time line for School B STUs provides a possible solution to be reviewed by subject leaders/teachers who have used School B throughout the session.

3 Plenary 15 minutes

Slide 4.13: Plenary

Make the point that a scheme of work consists of the unit plans, the curriculum map and a time line. This supports the department in delivering a secure curriculum, but the teacher extends and adapts the scheme of work for the learners in the lesson plans. It is essential to engage further with the learning outcomes within lesson planning and assessment.

In summary, participants have:

- ensured that they are familiar with the curriculum
- reviewed an existing scheme of work
- grouped learning objectives to produce a coherent new scheme of work by adapting existing plans or writing new ones
- established a curriculum map and time line for Year 7 pupils in September 2008.

Stress that the session has not looked at lesson planning or assessment, reporting and recording, but has created solid foundations on which to establish a scheme of work.

Ask subject leaders/teachers to use **handout 4.7: Action plan – Year 7 curriculum 2008** to record their next steps.

Ask everyone to consider the people they will need to involve and to whom the tasks might fall. For example, if the school is reviewing its curriculum model for Year 7, it might be working with other departments to produce unit plans. The same principles of review, grouping objectives together and establishing progression in learning hold. However, the school will need to establish a way of working with different colleagues to establish a coherent and compelling learning experience for pupils.

Ask participants to put these dimensions on the plan, concentrating on:

- What?
- How?
- Who?
- When?
- Resources: human, physical and time
- Success criteria: What will the curriculum for Year 7 look like if you have succeeded? What will be the experience for pupils? How will you find out if the learning experience is successful for pupils?

Slide 4.14: And finally…

Conclude the session by returning to the bigger picture. Reiterate the message that change is about 'disciplined innovation' driven by the three questions introduced at the beginning of the day:

- What are we trying to achieve?
- How do we organise learning?
- How well are we achieving our aims?

This session has broadly considered the second question and started to consider the third question.

Renewing the Framework for secondary ICT

Spring 2008 subject leader development meeting: Handouts for sessions 2, 3 and 4

Contents

00126-2008DOM-EN

Handout 2.1

The importance of ICT

'The increasing use of technology in all aspects of society makes confident, creative and productive use of ICT an essential skill for life. ICT capability encompasses not only the mastery of technical skills and techniques, but also the understanding to apply these skills purposefully, safely and responsibly in learning, everyday life and employment. ICT capability is fundamental to participation and engagement in modern society.

ICT can be used to find, develop, analyse and present information, as well as to model situations and solve problems. ICT enables rapid access to ideas and experiences from a wide range of people, communities and cultures, and allows students to collaborate and exchange information on a wide scale. ICT acts as a powerful force for change in society and citizens should have an understanding of the social, ethical, legal and economic implications of its use, including how to use ICT safely and responsibly. Increased capability in the use of ICT supports initiative and independent learning, as students are able to make informed judgements about when and where to use ICT to enhance their learning and the quality of their work.'

(*The National Curriculum 2007*, ICT programme of study for Key Stage 3 and Key Stage 4)

Handout 2.2 (1 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 4	They add to, amend and combine different forms of information from a variety of sources. 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 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.	Pupils combine and refine different forms of information from various sources. 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 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 digital communication. They understand the risks associated with communicating digitally, including the security of personal information. They plan and test sequences of instructions. They use ICT-based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions.

00126-2008DOM-EN

Handout 2.2 (2 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 4 (cont.)	They compare their use of ICT with other methods and with its use outside school.	They use ICT to organise, store and retrieve information. 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. They understand how ICT devices with sensors can be used to monitor and measure external events.	Pupils combine ICT tools within the overall structure of an ICT solution. They 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 digital communications. They create sequences of instructions and understand the need to be precise when framing and sequencing instructions.

00126-2008DOM-EN

Handout 2.2 (3 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 5 (cont.)	They explore the effects of changing the variables in an ICT-based model.	They explore the effects of changing the variables in an ICT-based model.
		They use ICT to organise, store and retrieve information using logical and appropriate structures.
		They use ICT safely and responsibly.
	They discuss their knowledge and experience of using ICT and their observations of its use outside school.	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.	They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.
		They use appropriate evaluation criteria to critically evaluate the fitness for purpose of their work as it progresses.

00126-2008DOM-EN

Handout 2.2 (4 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 6		Pupils plan and design ICT-based solutions to meet a specific purpose and audience, demonstrating increased integration and efficiency in their use of ICT tools.
	Pupils develop and refine their work to enhance its quality, using information from a range of sources.	They develop and refine their work to enhance its quality, using a greater range and complexity of information.
	Where necessary, they use complex lines of enquiry to test hypotheses.	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 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 develop, try out and refine sequences of instructions and show efficiency in framing these instructions, using sub-routines where appropriate.
	They use ICT-based models to make predictions and vary the rules within the models.	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 assess the validity of these models by comparing their behaviour with information from other sources.
		They plan and review their work, creating a logically structured portfolio of digital evidence of their learning.
	They discuss the impact of ICT on society.	They discuss the impact of ICT on society.

00126-2008DOM-EN

Handout 2.2 (5 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 7		Pupils design and implement systems. They are able to scope the information flow required to develop an information system.
	Pupils combine information from a variety of ICT-based and other sources for presentation to different audiences.	They 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 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 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.
	They use ICT to measure, record and analyse physical variables and control events.	They develop, test and refine sequences of instructions as part of an ICT system to solve problems.
	They design ICT-based models and procedures with variables to meet particular needs.	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 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.

00126-2008DOM-EN

Handout 2.2 (6 of 7)

Old and new level descriptions

	Current level description	Modified level description
LEVEL 7 (cont.)	They take part in informed discussions about the use of ICT and its impact on society.	They make use of audience and user feedback to refine and enhance their ICT solutions. 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.	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. They take part in informed discussions about the social, economic, ethical and moral issues raised by ICT.

00126-2008DOM-EN

Handout 2.2 (7 of 7)

Old and new level descriptions

	Current level description	Modified level description
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.	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.

00126-2008DOM-EN

Handout 2.3

Time line

Three different cohorts are followed through on a diagonal from their start in Year 7 (top row), following left to right to their end year in Year 11 (bottom row). The year groups most affected by the new programmes of study are shown in dark red. Planning for this year group only would allow for a phased implementation. Other, lighter shades could be included in evolving plans as the department chooses.

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14
Year 7	Current KS3	**new KS3**					
Year 8	Current KS3	Current or new KS3	**new KS3**				
Year 9	Current KS3	Current or new KS3	Current or new KS3	**new KS3**			
Year 10	Current GCSEs	Current GCSEs	Current GCSEs	**Functional skills New GCSEs**	**Functional skills New GCSEs**		
Year 11	Current GCSEs	Current GCSEs	Current GCSEs	Current GCSEs	**Functional skills New GCSEs**	**Functional skills New GCSEs**	

Note: The relationship of functional skills to GCSE will be informed by the pilot; however, to achieve grade C or above, pupils will require functional skills level 2.

Handout 3.1 (1 of 2)

Strand 3 Communicating information

Substrand 3.3 Communicating

Pupils will learn to:

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
capture, store and exchange information digitally by a variety of means	select appropriate methods of exchanging digital information and recognise that the format affects the method of exchange	recognise and describe the technical limitations and strengths associated with a range of digital communication methods			
use digital communication to share information and collaborate with others for a purpose	use digital communications for the sharing and collaborative development of ideas for a variety of purposes	use a range of tools to automate the sharing of information and communication for a range of purposes	refine the use of tools to create an efficient communication system to facilitate collaboration	apply communication systems to facilitate collaboration and dissemination of information with a wider and possibly unknown audience, taking account of appropriate use of feedback	

00126-2008DOM-EN

Handout 3.1 (2 of 2)

Strand 3 Communicating information

Substrand 3.3 Communicating

Pupils will learn to:

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
recognise the risks associated with the sharing of personal information digitally and to take actions to protect themselves	work in a safe and responsible way when communicating with others	be responsible, safe and secure in all communications	describe the moral, social, legal and ethical issues relating to digital communication and the sharing of information, and apply them when communicating in a responsible, safe and secure manner	exchange information securely, minimising the risks and the misuse of personal information; reflect critically on the use of digital communications, the implications for international communication and the impact on global life	support and direct organisations to develop acceptable use and safety policies that contain appropriate guidelines on exchanging and sharing information

00126-2008DOM-EN

Handout 3.2

Blank progression template

Progression through a substrand

Pupils will learn to:

Year 7	Year 8	Year 9	Year 10	Year 11	Extension

00126-2008DOM-EN

Handout 3.3 (1 of 2)

Strand 4 Evaluating

Substrand 4.1 Evaluating work

Pupils will learn to:

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
select ICT tools which will support the development and accuracy of their work, and learn the benefits of checking, correcting and refining their work as it progresses	improve the quality of outcomes for specific audiences and purposes by using a range of ICT tools	use ICT tools together to demonstrate a variety of outcomes, enabling the most appropriate choice of tool to be made	compare and contrast the effects on a system of combining different ICT tools in different ways	evaluate their use of ICT tools in enabling a user to interact with the system efficiently	compare and contrast existing solutions to the same problem, identifying reasons for particular approaches
agree and use simple criteria, and understand how to improve their work	make and use simple success criteria that ensure fitness for purpose	devise and review complex success criteria to modify and develop their work as it progresses	devise and review complex success criteria to modify and develop their work as it progresses; pupils recognise the need to interpret end-user requirements into the system's success criteria	incorporate complex success criteria into the design and implementation of a system and amend these throughout the development of the system life cycle	outline and describe the process for the identification of detailed success criteria, to support others in developing a complex system

00126-2008DOM-EN

Handout 3.3 (2 of 2)

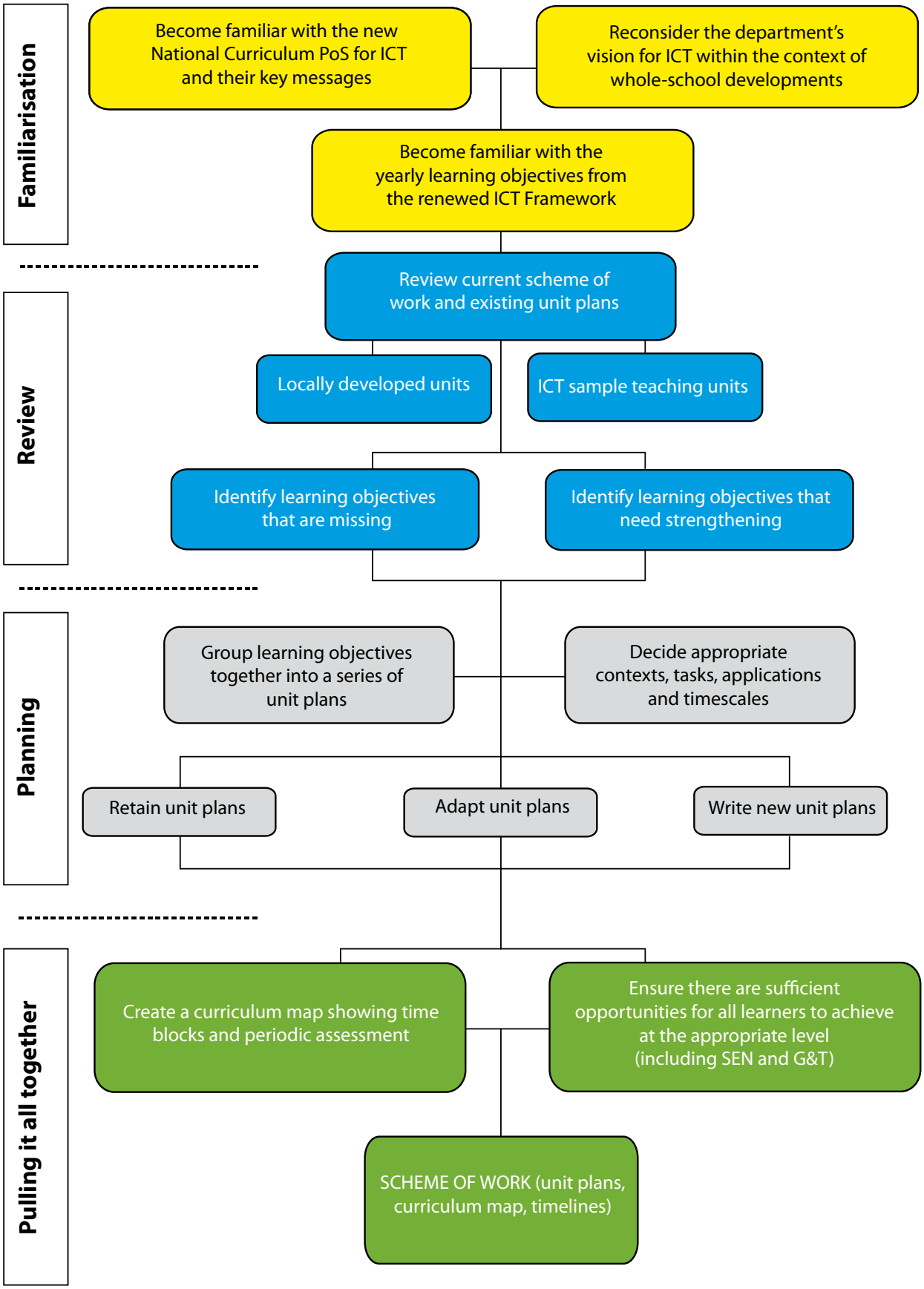
Substrand 4.1 Evaluating work (cont.)

Pupils will learn to:

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
explain the reasons for choices they have made	justify the process they use in relation to the task	evaluate the effectiveness of their approach to developing an ICT solution	consider other related tasks and problems in order to define the increasing scope of their ICT solution	carry out linked evaluations of different aspects of their work, from specification to reporting	outline and describe the testing processes required, to support others in solving a complex problem
act purposefully on feedback	gather and use feedback to inform future work	gather, record and use systematic feedback from users to improve their work	plan and implement a testing regime that incorporates trials with users, and use the information gathered to refine their work in a discriminating way	apply user feedback and their own evaluations to maximise efficiency and optimise user interaction with the system	
understand when to use ICT to solve a problem	reflect on their previous work and learning in order to improve their work	apply prior learning to their work	apply prior learning in their work and understand how it has improved their work	use their wide range of previous learning to help them design, develop and implement ICT systems	identify the learning required by others, to prepare them to solve a specific problem or design a system

00126-2008DOM-EN

Handout 4.1: Planning flow chart



Handout 4.4 (1 of 3)

School B unit summaries

Unit: Staying healthy

Timing: 7 weeks

Overview

Pupils develop their understanding of audience and fitness for purpose by producing an A4 newsletter on a topic of interest (e.g. healthy lifestyles, to follow on from 'Organising to be healthy').

The problem requires pupils to include research, considering validity and bias, and to obtain primary and secondary sources. Pupils need to plan, refine and develop the newsletter; they import images; import text, e.g. quotes; create text; and evaluate work and learning.

Pupils work in groups or pairs to research and produce a two-page A4 newsletter.

Outline of the unit

The class discuss the topic in order to establish the success criteria of the newsletter for a specified audience.

The class is taught use of hierarchical folders, file names and school conventions.

Pupils, in pairs, research the topic and seek text, images and if possible a quote. They share the information digitally. The class discuss validity and bias and check their information for validity and bias.

Pupils decide on the layout of the newsletter and individually construct their draft pages using text and images. They work collaboratively to develop their individual pages using feedback. They combine their pages to form a single document.

In pairs, pupils evaluate their work against the criteria established. The whole class identify what they have learned and where they will use what they have learned elsewhere.

Unit: Initial success

Timing: 3 weeks

Overview

Pupils use a program that allows them to select instructions to move objects around a screen. Pupils explore sequencing instructions by creating a series of commands which make their initials dance.

Outline of the unit

Pupils are introduced to creating and developing instructions by directing an object around a screen. They develop their understanding by using the 'repeat' command to move the object in a repeated pattern.

The teacher explains the problem, which is for pupils to move the letters of their initials to a random position by pressing one key and then to reformat the letters by pressing another key. Success criteria are established.

Handout 4.4 (2 of 3)

Pupils plan the sequence of their instructions, and implement and test their ideas.

In pairs, pupils test each other's work and make any necessary corrections. The class could vote for the best work and share their results and process.

Unit: Organising to be healthy

Timing: 6 weeks

Overview

Healthy eating provides a context for this unit, which investigates the wishes of pupils for a changed menu for school lunches.

Pupils develop a questionnaire to explore the wishes of the whole school and collate and analyse the results to draw conclusions. The pupils complete the activity by reporting their findings to the headteacher.

Outline of the unit

The school chef outlines his vision for a healthy eating school to pupils, but wishes to have their views.

Pupils are tasked to report on the views of fellow pupils on healthy eating for the school chef so that improvements can be made to the menu. The class agree criteria for the report. As a class, the questions to be answered are established and the data to be collected is identified.

The pupils design a questionnaire or data collection sheet and use to collect data. Data is collected and entered into a class spreadsheet structure.

Pupils have their own individual copies of the spreadsheet and visually check for errors and plausibility. They query the spreadsheet using filters to answer questions. Findings are presented using tables and graphs; pupils explain their choice of tools selected.

Pupils write a letter or report for the school chef explaining their findings, and acknowledging their sources (e.g. class 7A). They write a conclusion of their findings. They use peer-to-peer collaboration to comment on each other's reports, and they act on the feedback given.

Unit: Inform the school community

Timing: 3 weeks

Overview

Pupils use the information from the previous unit ('Organising to be healthy') and plan and implement an efficient information point for the school community.

Outline of the unit

The class develop an understanding of the characteristics of an information point and how the way it works differs from a linear presentation.

Handout 4.4 (3 of 3)

The class discuss the purpose of the information point and are shown the techniques they could apply. They plan the outline of their information point system, showing the menu and choices, and implement their plan.

The class discuss the importance of testing and how this might be done, and the giving and receiving of feedback. In pairs, they test their information points; they obtain feedback and then refine their information points.

Unit: Getting economical!

Timing: 6–7 weeks

Overview

This unit uses a problem-solving approach to explore the economic and environmental impact of shopping for a basket of healthy food in a variety of supermarkets.

Pupils develop a spreadsheet model to investigate the cost of a basket of food at three supermarkets and then extend the model to include the environmental costs of travel to and from the supermarket.

Outline of the unit

The whole class is presented with the problem of how to select the best value for a basket of shopping. They discuss the problem and how the problem might be solved. They agree ten different items to be in the basket, the number of each required, and which three supermarkets they are selecting. The class is divided into three groups to find out the cost per item.

Pupils use a spreadsheet template to put in the cost of the items. Developing the model to find the total cost of each basket allows the pupils to develop the concept of the function of rules in a model and identify the purpose of the rules. Pupils use the model to conclude which is the best value, answering 'what if?' questions to explore changing values.

The problem is extended to explore whether the costs provide best value when travel is taken into account. Pupils investigate the distance from school to the supermarkets and typical car price per mile of travel, and the models are developed to include these factors.

Some pupils develop their models further to factor in the use of public transport to the supermarkets. Pupils draw conclusions and report on what they have found using graphs and text.

Handout 4.5 (1 of 3)

Sample teaching unit overview with additional opportunities

ICT sample teaching unit 7.1 (Using ICT for exchanging and sharing information), Ref: 0399/2002

About sample teaching unit 7.1

In this unit pupils will plan and create presentations about themselves. It is intended that each presentation will be projected on screen and accompanied by a spoken commentary. The audience will be the rest of the class. Pupils will explore the concept of 'fitness for purpose' when using images, text, colour and sound to enhance their presentation. They will consider how to match and adapt their presentation to a given audience and purpose. Finally, they will evaluate the suitability of their work for different audiences and purposes.

Possible extensions

Pupils can use phone cameras to capture, store and exchange information digitally by a variety of means.

Additionally, if pupils work in groups they could use digital communication to share information and collaborate with others for a purpose.

By planning specific discussions on the appropriate use of cameras and on cyber bullying, pupils recognise the risks associated with the sharing of personal information digitally and take actions to protect themselves.

By introducing pupils to master slides and other template features pupils would use automated processes to support consistency of style and presentation.

ICT sample teaching unit 7.2 (Using data and information sources), Ref: 0013/2003

About sample teaching unit 7.2

In this unit, pupils identify the purposes of information. They consider how to set up a survey sample and phrase questions appropriately, so that they gather information that is relevant to the task. They will explore the internet as a source of information and learn how to narrow down a search. Finally, they will learn how they can be misled by inaccurate or incomplete information and how to judge the reliability of a website. Websites referred to in these materials existed at the time of going to print. Owners of websites may make unexpected changes to their sites for various reasons, or may allow their sites to fall out of date. You should check all website references carefully to see if they are still relevant, or if they have changed, and substitute other references where appropriate.

Possible extensions

Part of the task where pupils search and explore internet sites could be extended to acknowledging sources and recognising copyright.

Handout 4.5 (2 of 3)

ICT sample teaching unit 7.3 (Making a leaflet), Ref: 0410/2002

About sample teaching unit 7.3

In this unit pupils will plan and create a leaflet to give pupils in Year 6 information about subjects they will study in Key Stage 3. Your pupils will explore the use of images, text, colour and layout to enhance their leaflets. They will consider how to match the design of their leaflet to a given audience and purpose. Finally, pupils will identify evaluation criteria and use them to evaluate their work for different audiences and purposes.

Possible extensions

By introducing pupils to templates and other automated features within desktop publishing (DTP) packages pupils would use automated processes to support consistency of style and presentation.

Opportunities will also exist for pupils to capture, store and exchange information digitally by a variety of means.

ICT sample teaching unit 7.4 (Introduction to modelling and presenting numeric data), Ref: 0417/2002

About sample teaching unit 7.4

In this unit pupils will use spreadsheets to model simple situations. They will use basic spreadsheet functions to construct, explore and amend simple models and consider how to manipulate graphs and tables in order to present their findings effectively. This unit uses the example of a school disco. Teachers can achieve the same learning objectives with a range of other examples. The lessons are designed for pupils working at levels 4 and 5 with extension work for pupils working at higher levels. Adaptations and additional material are suggested for the less experienced pupils or for pupils working at lower levels.

Possible extensions

Through a greater focus on the report to the headteacher pupils could reflect on their use of ICT to improve their work through drafting and refining.

Additionally pupils have an opportunity to match the content and style to the audience and purpose.

ICT sample teaching unit 7.5 (Data handling), Ref: 0447/2002

About sample teaching unit 7.5

In this unit pupils will consider how to collect relevant data to answer a question. They will design a file to handle the data and will check their entries for accuracy. Finally, they will use the database functions in a spreadsheet package to interrogate their data and consider the plausibility of the conclusions they have drawn.

Handout 4.5 (3 of 3)

Possible extensions

By sharing the data handling diagram with pupils they gain a better understanding of how to represent simple processes as diagrams to plan the task.

Pupils can be given opportunities to collate data into a database and then import and export data in appropriate formats.

Additional planned discussions around information use in society will consider examples of electronic databases in everyday life.

ICT sample teaching unit 7.6 (Control and monitoring), Ref: 0074/2003

About sample teaching unit 7.6

The unit helps pupils to understand that technology is used to control many everyday events, such as the operation of traffic lights and the raising of car park barriers. Pupils use software to simulate a range of familiar scenarios and to develop and refine flowcharts for control programs. The efficiency of the programs is enhanced through loops and subroutines. In the final lesson of the unit, pupils consider how the systems controlling a lighthouse could be adapted to help, for example, a person with impaired hearing at home.

Possible extensions

Throughout the planning stage of systems, emphasis can be placed on how pupils represent simple processes as diagrams to plan the task.

Within the wider class discussions pupils can check whether or not the ICT tools they use are appropriate for the task in hand.

Handout 4.7

Action plan – Year 7 curriculum 2008

What	How	When	Who	Resources	Success criteria	Monitoring/evaluation and evidence
1						
2						
3						

Lines of progression in ICT

Overview of strands

Strands	Substrands
1 Finding information	1.1 Using data and information sources
	1.2 Searching and selecting
	1.3 Organising and investigating
2 Developing ideas	2.1 Analysing and automating processes
	2.2 Models and modelling
	2.3 Sequencing instructions
3 Communicating information	3.1 Fitness for purpose
	3.2 Refining and presenting information
	3.3 Communicating
4 Evaluating	4.1 Evaluating work (Discrete but also embedded into the other nine substrands)

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Learning objectives

1 Finding information

1.1 Using data and information sources

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• use information from primary or secondary sources	• use information from primary or secondary sources and know when to choose the different types	• collect data systematically from sources for an identified purpose			
• create information from data for specific purposes and audiences, and recognise how the presentation of information can affect its validity and bias	• recognise how the content and style of information can influence the message it gives and that data can be distorted and misused	• synthesise information from secondary sources and understand how this can lead to bias	• recognise that the types of information sources they use and how they present these has an impact on different users, and that the source should be questioned for its relevance and value		

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• combine and refine information and data sources to answer and pose questions	• justify the use of particular information sources to support an investigation or presentation, and devise and apply criteria to evaluate how well various information types support a task	• create an efficient data-collection process that collects validated data	• develop and justify appropriate information-capture systems for others to use	• evaluate and compare different information sources for relevance, clarity, usefulness, ease of use, and provenance, as part of the design and implementation of a system for others to use • evaluate in depth a range of different information sources and give fully justified reasons for the choice made for a particular purpose, taking relevance, compatibility with intended processing, and ease of understanding by user into consideration

1.2 Searching and selecting

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• select information for a task from a range of sources and be aware of the relative strengths and weaknesses of these sources	• select information from a range of sources and assess the potential value of the information for a task	• select information for a task, using other sources to check the suitability of the information	• independently select appropriate information from a wide range of sources for a specific task, taking account of their ease of use	• independently select appropriate information from a wide range of sources for a specific task, taking account of their ease of use for other users	• identify the range of approaches which others could take in searching and selecting information and identify the most appropriate approaches
• frame searches in an appropriate and considered way in relation to the required results	• frame searches in an appropriate and considered way in relation to the required results, for a more complex problem	• frame searches in an appropriate and considered way in relation to the required results for a more complex and unfamiliar problem	• identify the advantages and limitations of different information-handling applications and information sources in relation to the needs of the user	• compare and contrast in detail different information-handling systems in relation to their functionality and underlying technology	
• search for information, altering and developing the search as appropriate, checking findings for plausibility	• use basic logical operators and apply these when searching for information	• construct queries and complex searches to explore information for a specific purpose, such as testing a hypothesis	• develop systems and files to aid others in searching for and selecting information	• design, develop, document and implement an information system for others to use	• identify in detail the varying needs of a range of users and the implications of these for the possible improvement of the system

00126-2008DOM-EN

• use search terms correctly	• understand that the different ways in which search engines work can affect which information is returned	• carefully consider search results and review the interpretation of data, judging its value	• carefully consider search results and review the interpretation of data for other users	• incorporate features to meet user needs when designing their system	• incorporate the needs of all potential users into the design of their system
• acknowledge sources and recognise copyright	• acknowledge all sources, recognising copyright and other constraints	• acknowledge sources, defining primary and secondary sources, and recognise copyright and other constraints	• acknowledge both primary and secondary sources and the need to obtain copyright permission	• apply copyright law and acknowledge intellectual property rights, and use the correct terminology	

1.3 Organising and investigating

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• save files using appropriate file names and organise files in a hierarchical folder structure	• save files in appropriate formats and create a hierarchical folder structure				
• identify the significant data required to solve a problem	• identify the essential data and ICT tools required to solve a problem				
• develop closed questions which will lead to specific answers in a suitable form – e.g. text, numbers – and act safely and responsibly in seeking information	• develop open and closed questions with sensitivity, recognising people's cultural, social and ethical differences	• use automated processing at the point of collection to gather responses efficiently using open and closed questions	• develop validation within systems and understand the need for conversion of responses to make them fit to process		

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• design a questionnaire or data-collection sheet to collect relevant data	• design a questionnaire or data-collection sheet to collect relevant data, and obtain and use feedback to establish what are good questions	• develop testing, including employment of user feedback, to refine existing approaches and create new ones	• use the system life cycle to plan an information system, taking account of feedback at the various stages	• carry out systematic analysis of user needs and incorporate this into the design, documentation, implementation and evaluation of a system for others to use	• carry out systematic analysis of the needs of a range of users for a complex problem, seeking information from a range of sources
• recognise the structure and format of data that can support checking and correcting to remove errors after entry; recognise that data may not be plausible and that this affects results	• produce or adapt a data structure, enter data into this and check that data is reasonable and accurate	• produce or adapt a data structure to enhance efficiency, and enter data into this; establish a range of validation checks and visual checks to ensure a viable data set	• produce a data structure to enhance efficiency; create a range of validation checks to ensure a viable data set when developing a data system, and explain the features which make it efficient	• use and compare different approaches to validation in order to successfully support other users	• use a comprehensive validation system to support a range of other users
• generate simple queries using AND/OR operators applied to data items within fields	• use more complex queries – AND, OR, NOT; use different searches to produce the most effective result or to collect extra or different data for more detailed conclusions	• develop a flat-file database structure, taking into account possible ways in which the database may be interrogated	• identify the link between flat-file databases, their interrogation and the over arching purpose of the investigation	• develop and incorporate into the design of a system the links between the database structure, its interrogation and the overall system specification	• design and develop a relational database structure, incorporating data storage efficiency, and test the strategy design against the system specification

• use graphs to represent information; show all key features; justify their choice of chart or graph; produce a report from the information and check the accuracy of their conclusions	• represent information in graphs, charts or tables, and in a report where appropriate; justify the form of representation and check the plausibility of their conclusions	• represent information in different forms and integrate information from different ICT tools to produce a solution	• represent information in different forms and integrate information from different ICT tools to produce an effective solution	• evaluate the effectiveness of different solutions when integrating information using different ICT tools	• describe how the system could be developed to improve the efficiency of the solution
• consider examples of electronic databases in everyday life	• identify examples of automated data collection and recognise the impact of electronic databases on learning, everyday life and employment	• describe the impact of electronic databases on learning, everyday life and employment, and the potential for misuse of personal data	• show an awareness of safety issues in the planning and implementation of their work	• incorporate safety issues into the design documentation and implementation of a system for others to use	
• check whether the ICT tools they use are appropriate for the task	• evaluate different applications in terms of the structure and method of processing data	• establish complex success criteria to evaluate a solution to a problem	• create a specification and plan against this, documenting the process throughout	• evaluate the design of their systems against the original specifications	• evaluate the system against the derived success criteria and suggest non-trivial areas for development

2 Developing ideas

2.1 Analysing and automating processes

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• represent simple processes as diagrams to plan the task	• identify the key elements of a problem and represent components in a plan	• represent complex information systems in diagrammatical form to support their development			
• use automated processes to support consistency of style and presentation	• automate simple processes by harnessing software tools; recognise where automation tools, such as filtering, can be used to improve safety when using the internet	• refine existing systems and make them more efficient through automation	• use automation, where appropriate, to support users of a system; recognise the benefits of planning for automation within the process of scoping a system	• plan for and incorporate automated features when designing and implementing a system for others to use	• originate and design automated features when developing and implementing a system for others to use

2.2 Models and modelling

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
● recognise the difference between data, text and formulae in a computer model and organise these so that the model is fit for purpose	● combine variables within a model in different ways to form rules	● extend the scope of a complex model by incorporating or changing rules	● design or develop a complex model to meet a need, identifying appropriate assumptions, variables and rules	● design or develop a complex model, identifying appropriate assumptions, variables and rules to meet a specific need for other users	● suggest and justify in sufficient detail the structure and components required for specific models for others to construct
● use a model to predict an outcome	● recognise that the rules contained within a model determine its output, and make more complex predictions based on several variables	● refine rules (to increase validity), using information from other sources	● list, describe and justify the input, process, and output characteristics of a model		

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• explain how rules govern a model	• amend existing simple models by changing variables and formulae	• extend existing more complex models and create their own from a given design, reviewing efficiency	• create complex models to solve a problem	• compare and contrast in detail different approaches to modelling the same problem	• understand the process used in industry and commerce for the development of models and start to relate these to the way they develop their own models
• obtain information from a model and check this for plausibility	• identify whether a model has an appropriate set of variables to make it suitable for a particular purpose, and assess its accuracy by comparing its outcomes with those from other sources	• check their output against that from other sources to assess the validity of the model, where appropriate	• identify criteria to test whether a model is fit for purpose	• design and create complex models, considering a range of approaches, as part of the design and implementation of a system	• extend the design by considering the needs of different groups of users

2.3 Sequencing instructions

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
● rationalise a set of instructions by repeating sections	● use precision and accurate syntax when framing instructions	● use efficient structuring of instructions and recognise how this increases flexibility and eases testing	● use variables to create increasingly complex systems	● use feedback within an increasingly complex system	
● plan and implement sets of instructions, predicting outcomes before execution	● test and refine sequences in order to achieve specific outcomes	● break down a problem into manageable sections that can be represented by sub-procedures where appropriate	● plan the integration of sequences of instructions with other elements to form an ICT system	● plan, design and implement linked and structured sequences of instructions as part of a system for others to use	
	● recognise that sequencing instructions is fundamental to a wide range of ICT applications	● review own and others' sequences of instructions to improve efficiency			● identify and communicate the key benefits and advice required to support others in developing a system

00126-2008DOM-EN

3 Communicating information

3.1 Fitness for purpose

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• recognise the common layouts and conventions used in different types of communication and how these address intended and familiar audience needs	• plan communication projects and select the appropriate communication (type, length, media) for the intended audience (considering audience needs and expectations), purpose and environment	• use an understanding of technical considerations to produce effective and efficient digital communications	• produce solutions that are accessible for any user: solutions that recognise accessibility issues and apply the conventions relating to digital media	• recognise and describe the impact of different formats and conventions on presentation, ease of use, ease of understanding and accessibility	• consider the impact of different formats and conventions for different groups of users for whom the system might be extended or adapted
• recognise the limitations and opportunities of different layout formats and use these appropriately	• reflect on the work of others to help plan and amend their communications and understand how effective presentations or publications address specific audience needs and expectations	• use a knowledge of publications and media presentation techniques to devise complex success criteria to assess the quality and impact of communication products, and apply these criteria to their work	• use feedback from the audience to inform the development of their digital communications	• make their work more appropriate for a given audience by developing structured methods of capturing specific feedback and using it to refine their work	• make their work more appropriate for a range of audiences, some unknown, by developing structured methods of capturing specific feedback and using it to refine their work

00126-2008DOM-EN

3.2 Refining and presenting information

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• use ICT to improve their work through drafting and refining	• draft, refine and structure their work using a combination of ICT tools to convey meaning more effectively				
• combine text, images, tables and sounds from a number of sources to convey meaning	• modify and develop text, images, tables and sounds from several sources within the structure of a piece of work	• refine and combine different components of text, images, tables and sounds from a range of sources			

• match the content and style of their work to the audience and purpose	• extract, combine and modify relevant information for a specific purpose, and structure and sequence this to meet audience needs	• work independently and efficiently to synthesise information from a range of sources, structuring and refining presentations for specific audiences and purposes	• combine ICT tools to input, process and output information to meet the needs of a user	• understand the techniques and systems needed to support information processing and communication, including the hardware and software subsystems needed to support the techniques and systems	
• import and export data in appropriate formats	• use a range of ICT tools efficiently to refine the presentation of information for a specific purpose	• identify the advantages and disadvantages of different software applications for specific purposes, and justify their choices, integrating ICT tools where appropriate	• scope the range of information required to develop an automated interactive communication system	• design and implement an automated interactive system for others to use	• develop and refine the design and implementation of an automated, interactive system, based on feedback from different groups of users

3.3 Communicating

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
● capture, store and exchange information digitally by a variety of means	● select appropriate methods of exchanging digital information and recognise that the format affects the method of exchange	● recognise and describe the technical limitations and strengths associated with a range of digital communication methods			
● use digital communication to share information and collaborate with others for a purpose	● use digital communications for the sharing and collaborative development of ideas for a variety of purposes	● use a range of tools to automate the sharing of information and communication for a range of purposes	● refine the use of tools to create an efficient communication system to facilitate collaboration	● apply communication systems to facilitate collaboration and dissemination of information with a wider and possibly unknown audience, taking account of appropriate use of feedback	

00126-2008DOM-EN

• recognise the risks associated with the sharing of personal information digitally and to take actions to protect themselves	• work in a safe and responsible way when communicating with others	• be responsible, safe and secure in all communications	• describe the moral, social, legal and ethical issues relating to digital communication and the sharing of information, and apply them when communicating in a responsible, safe and secure manner	• exchange information securely, minimising the risks and the misuse of personal information; reflect critically on the use of digital communications, the implications for international communication and the impact on global life	• support and direct organisations to develop acceptable use and safety policies that contain appropriate guidelines on exchanging and sharing information

4 Evaluating

4.1 Evaluating work

Year 7	Year 8	Year 9	Year 10	Year 11	Extension
• select ICT tools which will support the development and accuracy of their work, and learn the benefits of checking, correcting and refining their work as it progresses	• improve the quality of outcomes for specific audiences and purposes by using a range of ICT tools	• use ICT tools together to demonstrate a variety of outcomes, enabling the most appropriate choice of tool to be made	• compare and contrast the effects on a system of combining different ICT tools in different ways	• evaluate their use of ICT tools in enabling a user to interact with the system efficiently	• compare and contrast existing solutions to the same problem, identifying reasons for particular approaches
• agree and use simple criteria, and understand how to improve their work	• make and use simple success criteria that ensure fitness for purpose	• devise and review complex success criteria to modify and develop their work as it progresses	• devise and review complex success criteria to modify and develop their work as it progresses; pupils recognise the need to interpret end-user requirements into the system's success criteria	• incorporate complex success criteria into the design and implementation of a system and amend these throughout the development of the system life cycle	• outline and describe the process for the identification of detailed success criteria, to support others in developing a complex system

• explain the reasons for choices they have made	• justify the process they use in relation to the task	• evaluate the effectiveness of their approach to developing an ICT solution	• consider other related tasks and problems in order to define the increasing scope of their ICT solution	• carry out linked evaluations of different aspects of their work, from specification to reporting	• outline and describe the testing processes required, to support others in solving a complex problem
• act purposefully on feedback	• gather and use feedback to inform future work	• gather, record and use systematic feedback from users to improve their work	• plan and implement a testing regime that incorporates trials with users, and use the information gathered to refine their work in a discriminating way	• apply user feedback and their own evaluations to maximise efficiency and optimise user interaction with the system	
• understand when to use ICT to solve a problem	• reflect on their previous work and learning in order to improve their work	• apply prior learning to their work	• apply prior learning in their work and understand how it has improved their work	• use their wide range of previous learning to help them design, develop and implement ICT systems	• identify the learning required by others, to prepare them to solve a specific problem or design a system

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