

TEACHER'S NOTES

# ICT Levels 1 and 2

## Chapter 6

### Entering, developing and combining information (Part B)

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## EDEXCEL FUNCTIONAL SKILLS PILOT

## TEACHER'S NOTES

## ICT Levels 1 and 2

Keith Jeram, Alan Meechan and Alison Meechan

## Draft for pilot centres

- Chapter 1:** Using ICT systems  
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*How to use the Functional ICT materials*

These materials have been developed to help learners acquire the skills that are outlined in the QCA Functional Skills Standards for ICT under the three skills areas of 'Use ICT systems', 'Find and select information', 'Develop, present and communicate information'.

*The structure of the materials*

The chapters follow the sequence of the standards, with each chapter divided into sections matching the coverage of the standard or standards indicated. The standards are given at the start of each chapter, using the wording from the official document on the teacher pages and an adapted version, more appropriate to learners' needs, on the learner pages.

This structure should not be taken as a recommended teaching framework but merely as the method deemed most appropriate to demonstrate complete coverage of the standards. It is expected that teachers will organise their teaching sessions according to the needs, level of experience and interest of their learners, and the contexts in which they are working.

It should also not be assumed that material included here will form part of the functional skills assessment: by its very nature, the assessment will cover only part of the standards.

*Level differentiation*

The learner's materials are for learners working at Levels 1 and 2, and the content and activities are designed to be accessible to Level 1 learners. No attempt has been made to differentiate between the two levels in the pages of the learner's materials. The teacher's notes, however, use text in a tinted box to identify those activities and teaching points that are intended for Level 2 learners. The basis of the design of the materials is that, as in the standards, differentiation will be as much by outcome as by activity. The other key level differentiators – complexity, familiarity, technical demand and independence – are reflected in the tasks, which are designed to show the progression that is a feature of the standards:

At Level 1, learners would be expected to:

- identify the ICT requirements needed to solve a straightforward task and apply their knowledge and understanding to produce an appropriate solution (complexity)
- apply their knowledge and skills within a non-routine but familiar context (familiarity)
- apply a range of techniques in a number of applications to produce an appropriate outcome (technical demand)
- solve problems that are essentially instructor/tutor guided, demonstrating the confidence to make informed choices and knowing when to seek guidance (independence)

At Level 2, learners would be expected to:

- analyse multi-step tasks and separate the components, identifying the relevant ICT requirements and applying their knowledge and understanding to produce an appropriate solution (complexity)
- apply their knowledge, skills and understanding within non-routine and non-familiar contexts (familiarity)
- demonstrate the application of a wide range of techniques across several applications to produce an appropriate outcome (technical demand)
- solve problems independently, overcoming challenges to produce successful outcomes (independence)

This differentiation between levels requires the teacher to provide more guidance at Level 1 than at Level 2. With Level 1 learners, for example, teachers may choose to use a simplified task to allow a learner to practise the skill within their prior experience, whereas they may choose to enhance the challenge for Level 2 learners by using a more complex task that matches the learner's experience (more specific suggestions for differentiation are contained in the teacher's notes).

The activities have been developed with this varying guidance in mind, so that later activities in each section are expected to be undertaken with less teacher support. The expectation is, though, that all learners will be engaged in the learning process through discussion and social interaction.

*The elements of the chapter*

The chapters follow the standards and are divided into sections broadly corresponding to the coverage of those standards. Within each section there are two main sub-sections: 'Learn the skill', which provides information and facts for discussion and exploration; 'Develop the skill', which provides activities to practise the skills, test understanding and extend knowledge. The pages of the learner materials – and of these teacher's notes, too – also direct the learner/teacher to additional electronic resources in the form of 'skills demonstrations' (captivates) and 'assets'.

▶▶ Captivates are screen-based skills demonstrations of points made in the text, which can be clicked on for instruction or information.

📁 Assets are files of information provided or stored digitally, which may include photographs, sound clips, databases, spreadsheets, etc. These may also include material needed to perform the activities (e.g. tables to complete).

These resources are available on the website, at the same point where these materials were available for downloading.

*A note on resources and providing a safe working environment for learners*

Any suggestion for software to be used with activities is not meant to be exclusive. It is understood that different centres will have different resources, and that some centres will allow learners only limited access to the internet, will not accept downloading and will allow learners only partial control over their work-station. The resources have been developed on the understanding of variations in resources, access and control, but there are still bound to be activities that present challenges for some centres. Where possible, suggestions for alternatives have been given in the teacher's notes; teachers are expected, in any case, to adapt activities for the use of their own favourite, or personally developed, resources.

These restrictions on internet browsing, downloading, and altering machine configurations may create difficulties on functional skills courses, where the standards require learners to actively engage in such tasks. One possible technical solution to this problem is to employ **virtual machine software**, which allows an instance of an operating system (usually Windows or Linux) to be run in a virtual environment that is isolated from the real machine. Changes made in the virtual machine have no effect on the real machine and can be completely discarded when the virtual machine is closed. Alternatively, a working state can be preserved in the virtual machine by taking a 'snapshot' before closing the virtual machine.

A virtual machine can be used to safely browse the internet, download and install software, and explore machine settings, with no risk to the real machine or associated network.

The best-known virtual machine products are Microsoft Virtual PC (currently free) and VMWare Workstation.

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# 6 Entering, developing and combining information (Part B)

(pages 2–15 in the learner materials)

Skills area	Skill	Coverage	Unit
	<b>Level 2 in bold</b>	<b>Level 2 in bold</b>	
C Develop, present and communicate information	<b>C1</b> enter, develop and format information independently to suit its meaning and purpose including: <ul style="list-style-type: none"> <li>numbers</li> </ul>	<b>C1.5</b> enter, develop and organise numerical information that is fit for purpose (cell data types, cell ranges, <b>absolute and relative referencing</b> , formulas with a single operator, SUM function, <b>functions</b> , structure and layout of worksheet)  <b>C1.6</b> format numerical information appropriately (currency, percent, number of decimal places, <b>date, time, text wrap, row height, column width, gridlines, merged cells, cell borders</b> )	A Entering and formatting numerical information
	<ul style="list-style-type: none"> <li>graphs</li> </ul>	<b>C1.7</b> create and develop charts and graphs (pie chart, bar chart, single line graph, <b>scattergram</b> , [appropriate format]) to suit requirements, using suitable labels (title, axis titles, legend)  <b>C1.9</b> enter, organise, select and edit records using <b>field names and headings, data types and unique record identifier when appropriate (spreadsheet or database, use data filtering)</b>	B Creating and developing charts
	<ul style="list-style-type: none"> <li>records</li> </ul>	<b>C1.8</b> enter, organise and sort <b>records on one or more fields</b> (structured information) in ascending or descending order (field selection, data sort [alphanumeric], filter, <b>table, spreadsheet, database</b> )	C Ordering information
	<b>C2</b> bring together information to suit content and purpose	<b>C2.1</b> organise (combine images, graphs and tables with text; combine texts, graphics, sound and video footage) information of different forms or from different sources to achieve a purpose (for a poster, newsletter, web page, multimedia presentation, <b>catalogue, brochure</b> ), <b>bring together and organise components of images and text (image, chart, text alignment, captions, text wrap, use of text boxes, behind, in front, grouping)</b>	D Bringing together information to suit a purpose

## A Entering and formatting numerical information

Discuss why learners may want to use a spreadsheet. Look at the range of formulas and functions, including SUM, MIN, MAX.

### Activities

There is a lot of information in this section, so provide plenty of time for learners to go through the skills demonstration and activities.

#### Level 2

- Extend learners' knowledge of absolute and relative referencing by asking them to complete the following activities on Car travel costs 2.xls file.
- Enter the values 50, 75, 100, 150, 200 and 250 in order into cells A8 to A13.
  - Select the range B7:C7. Use the Edit/Copy menu to make a copy of the content of these two cells.
  - Click in cell B8. Paste the copied formulas. Notice that the formula result in cell C8 is zero. The value in cell B8 is also incorrect.
  - Look at the formulas in cells B8 and C8. The references to cells A8 and B8 are correct, but the formulas no longer correctly reference the miles-per-litre and petrol costs cell.

All the cell references in these formulas are *relative* references.

When we want a formula to always refer to the same cell when it is copied or moved, we need to use an *absolute* cell reference:

- Delete the formulas copied into cells B8 and C8.
- Now edit the original formulas as follows: Edit the formula in cell B7 to be =A7/\$B\$3. Edit the formula in cell C7 to be =B7\*\$B\$4. The formulas now contain absolute references to cells B3 and B4.
- Select the range B7:C7. Use the Edit/Copy menu to make a copy of the content of these two cells.
- Select the range B8:C13. Use the Edit/Paste menu to paste the copied formulas.
- Look at the formulas in this range. You should see the distance and petrol used references have been adjusted in each row, but the absolute cell references have not changed.
- Notice also that the cell formats have been copied and pasted as well as the formulas.

## B Creating and developing charts

In this section, Level 1 learners look at pie charts, bar charts and line graphs. There is additional material for Level 2 learners on scattergrams in these notes.

Talk about making the titles meaningful. Remind learners to label what each axis shows. Point out how

gridlines and values make the chart easier to read, and how legends can be used to make long labels easier to read.

Discuss how the percentage values are calculated automatically by the chart software; they are not part of the data from which the chart is plotted.

Good charts take time to produce. Chart wizards may need to be customised to make the charts fit for purpose.

### Level 2

- Extend Level 2 learners' knowledge and skills by looking at scattergrams. See the attached asset.

### Activity for Level 2

A supermarket wanted to know what the relation was between the amount that customers spend (in terms of money) and the time they spend in the store. It put electronic tags on its trolleys to measure how long each trolley was in use each time it was taken into the store by a customer. When a trolley reached the checkout, the trolley time was read and recorded against the total amount the customer spent.

Some of the data that was recorded is in the file *supermarket time and spend.xls*.

- Open this file and look at the data. It shows time spent in the store and the amount spent for 60 customers. Values have been rounded to the nearest minute and pound.
- Create a scattergram of the data.  
**Hint**  
It will help to select all the data in the two columns (not including the headings) before creating the chart. An easy way to select data spanning many rows is to click in the first cell in the range, scroll to the end of the range, press and hold down the Shift key, then click in the last cell in the range.
- Enter suitable titles for the chart and axes. Decide whether or not a legend is needed for this chart.
- Save your chart with a new name.
- Look at the chart:
  - What does it tell you about the amount spent and the time spent in the store? Can you explain this?
  - What can you say about the increase there was in the amount spent for customers who were in the store for longer than 20 minutes?

**Hint**  
This part of the chart looks a bit different from the section up to 20 mins.

- Draw a line of best fit on the chart. If your spreadsheet program provides drawing tools, you can do this on-screen. If not, print the chart and use a ruler and pen to draw the line.

**C Ordering information**

Presenting and storing information in a logical way makes it easier for the user and audience to access the information. In this section we look at how to sort information into numerical and alphabetical order.

Ensure learners know how to insert and delete rows and columns and sort and filter information on a single field.

**Sorting on more than one column**

**Level 2**

Here is our table again, this time with two more definitions added for each type of way. The table is sorted in ascending order on the first column.

No	Type of way	Description
1	road	human-made feature of the land
2	alley	narrow street
3	road	open way
4	lane	part of a motorway
5	causeway	path over a ditch or moat
6	road	paved surface for vehicles
7	path	pavement or sidewalk
8	alley	pedestrian lane in a town
9	alley	privately maintained thoroughfare
10	causeway	raised roadway
11	lane	right of way, open from ground to sky
12	causeway	road paved with cobblestones or pebbles
13	path	route for walkers
14	path	track in a garden
15	lane	well-defined track or path

If we want to sort the table so that all the different types of way are grouped, we need to sort on the second column. Here is the table sorted in ascending alphabetical order on the second column.

No	Type of way	Description
2	alley	narrow street
8	alley	pedestrian lane in a town
9	alley	privately maintained thoroughfare
5	causeway	path over a ditch or moat
10	causeway	raised roadway
12	causeway	road paved with cobblestones or pebbles
4	lane	part of a motorway
11	lane	right of way, open from ground to sky
15	lane	well-defined track or path
7	path	pavement or sidewalk
13	path	route for walkers
14	path	track in a garden
1	road	human-made feature of the land
3	road	open way
6	road	paved surface for vehicles

If we now want the definitions of each type of way to be in alphabetical order, we need to sort **first** on the second column, and **then** on the third column. This can be done in a single operation.

Sorting the table has been done using the Table/Sort menu. This opens the Sort dialog box.



The picture shows the dialog box set to sort the table on the 'Types of way' column in ascending order, and then sort each group of ways into ascending order on the 'Description' column. Notice that the 'Header row' button is selected: this tells the dialog to ignore the first row of the table because it contains column headings.

Here is the result of the sort:

No	Type of way	Description
2	alley	narrow street
8	alley	pedestrian lane in a town
9	alley	privately maintained thoroughfare
5	causeway	path over a ditch or moat
10	causeway	raised roadway
12	causeway	road paved with cobblestones or pebbles
4	lane	part of a motorway
11	lane	right of way, open from ground to sky
15	lane	well-defined track or path
7	path	pavement or sidewalk
13	path	route for walkers
14	path	track in a garden
1	road	human-made feature of the land
3	road	open way
6	road	paved surface for vehicles

The process of sorting information in a table is very similar in word-processing, database and spreadsheet applications. In spreadsheet applications it is necessary to select the range that contains the information before sorting.

**Wildcards**

The filter text 070\* includes a wildcard character. Use this text to locate all telephone numbers that start with 070 for all the males in the database. Hint: filter for males first, then apply the filter for telephone numbers.

**Database primary key**

Database information normally includes a designated primary key field. The type of information held in this field may be text or numeric, but the entry in this field must be different for every record in the database. This ensures that no two records in the database contain exactly the same information: each record is unique.

Each record in the database can be identified from its primary key. A primary key can be made up of more than one field.

The simplest way to implement a primary key is to include an auto-number field in the database and designate this field as the primary key. The first record created in the database will normally have the value 1 entered into this field, the next 2, and so on. Each time a new record is added to the database, the number in the auto-number field is automatically set to one greater than the previous largest number.

Each table in a database should include a field, or set of fields, that uniquely identifies each record stored in the table (a key). Keys are used to quickly find and bring together information stored in separate tables.

**D Bringing together information to suit purpose**

Learners need to understand how ICT can be used in a purposeful way. In order to organise information effectively, learners need to understand the differences between publications.

**Activities**

In the activities learners are encouraged to bring together the elements of the previous sections and produce a publication that is fit for purpose.

**Level 2**

Talk about bringing together images and text through text wrapping, use of captions and charts. Encourage learners to combine elements from various applications into one document. Look at how to insert a file into Word and text boxes.

Click in the document where you want to place the linked object or embedded object.

- a On the Insert menu, click Object.
- b Click 'Create from file'.
- c In the File box, type the name of the file you want to create a linked object or embedded object from, or click Browse to select from a list.
- d To create a linked object, select the 'Link to file' check box.
- e An embedded object is created if you don't select the 'Link to file' check box.

A linked or embedded object can also be created by copying information in one application – Excel, for example – and then using the Edit/Paste Special menu option to insert the information into the other application – Word, for example. For this to work, both applications must support linked/embedded objects.

### Text boxes

Text boxes are very useful objects that can be used to place text anywhere in a document, completely independent of other content. This allows text to be placed over or under other text and be positioned anywhere on the page.

To create a text box, click the Insert/Text Box menu option, then click and drag in the document. This will create an outlined box containing the typing caret (flashing cursor). Text can be entered into the box and formatted in the usual way.

Click in the box to select it. Drag a handle to change its size. Right-click on the border to open a context menu: the Format Text Box menu will provide the following format options, among others:

Wrapping style: place the text box over, under or within text.

Line and fill colours: set a colour for the background of the box and its border, including making it transparent so that anything below it shows through – useful for putting a caption on a picture.

Internal margins: set margins for text within the box.