
3 Unit 3: ICT Solutions for Individuals and Society

[AS level, mandatory, internally assessed]

3.1 ABOUT THIS UNIT

This AS level unit is mandatory and is internally assessed.

The World Wide Web allows individuals to access information on almost any topic imaginable. This access to information has had a fundamental effect on society and the way individuals live their lives.

This unit is assessed through your portfolio work. The mark on that assessment will be your mark for the unit. You will produce a presentation of the results of an investigation, including the use of a spreadsheet to analyse numeric data, along with a report on the sources and methods used to find information, to include:

- the selection and efficient use of research engines to find information required;
- an explanation of the impact of the availability of electronic information on individuals and society;
- information accessed from large websites;
- the use of databases to find required information;
- the use of spreadsheet software to analyse numeric data and present results;
- different types of data combined to present the results of the investigation;
- an evaluation of the methods used to find information and present the results.

3.2 WHAT YOU NEED TO LEARN

You need to learn about:

- public-service websites;
- search engines;
- databases;
- use of spreadsheet facilities;
- development of spreadsheets to present results of data analysis;
- presentation of the results of an investigation.

3.2.1 Public-Service Websites

Virtually all public-service organisations have a presence on the World Wide Web. You need to find out about and access websites relating to:

- government, both national and local, including census material;
- information services, e.g. museums, libraries, directory enquiries;
- emergency services, e.g. fire station, RNLI;
- the National Health Service;
- education;
- transport;
- broadcasting.

Many of these websites are very large. You need to navigate such large websites to access specific information using the facilities provided, such as navigation bars, textual hotspots, directories and internal search engines. You also need to download the information you require.

You need to identify the range of information each site offers and consider the impact on individuals and society of this increased availability of information. You also need to consider the impact on methods of communication between organisations, individuals and society, and the effect this has on people who do not have access to ICT.

3.2.2 Search Engines

The power of the World Wide Web as a resource is due to the ability of the user to search for specific information. You need to learn:

- what a search engine is;
- the range of search engines available and the differences between them;
- that entering the same search in different search engines may generate different results;
- which search engine is best for a particular purpose.

You need to use search engines to find and download the information you need for a task.

It is possible to enter search criteria that may generate thousands of responses. You need to use facilities available to add precision to your searches, including the use of:

- logical operators (AND, OR, NOT);
- advanced-search options.

3.2.3 Databases

A database is a collection of data stored in a computer system in some organised fashion so that desired items can be retrieved quickly according to various criteria. Databases may be large or small, on-line or stored locally.

You need to search databases to find the information you require, including the use of:

- searches using a single criterion;
- searches using relational operators such as =, >, <, <>, is the same as, comes before, comes after;
- complex searches using logical operators (AND, OR, NOT).

You need to present the results of searches as a report.

3.2.4 Use of Spreadsheet Facilities

When using spreadsheet facilities, there are a number of activities that you will do regularly. You need to carry out these activities without help, including:

- selecting and setting cell formats to match the data format;
- selecting and using suitable cell-presentation formats;
- using and manipulating spreadsheet data;
- using cell-referencing facilities appropriately;
- applying and using operators and formulae correctly;
- using built-in spreadsheet functions appropriately;
- using wizards.

You need to learn how to:

- set cell formats to match the data format, including:
 - decimal number;
 - integer number;
 - percentage;
 - date;
 - fraction;
 - text or character;
 - currency;
 - scientific;
 - custom or special;
- set cell-presentation formats, including:
 - horizontal alignment;
 - colour;
 - vertical alignment;
 - shading;
 - fonts;
 - borders;

- use and manipulate your spreadsheet to:
 - find data;
 - go to a specified cell;
 - search and replace data;
 - cut, copy, paste, move;
 - clear cell formats/contents;
 - use paste special;
- make appropriate use of cell-referencing facilities, including:
 - relative referencing;
 - cell ranges;
 - absolute cell referencing;
 - 3D referencing;
 - mixed cell referencing;
 - R1C1 referencing;
- apply and use the following operators in formulae correctly:
 - arithmetic operators, such as +, -, *, /, %, ^;
 - relational operators, such as =, <, >, >=, <=, <>;
 - the logical value FALSE, TRUE;
 - text concatenation & or +;
 - the use of parentheses ();
- use common built-in spreadsheet functions, including:
 - SUM;
 - INT;
 - COUNT;
 - MAX;
 - AVERAGE;
 - RAND;
 - MODE;
 - MIN;
 - SQUARE;
 - IF;
 - MEDIAN;
 - DATE.

3.2.5 Development of Spreadsheets to Present Results of Data Analysis

You need to use spreadsheet facilities to analyse numerical data, e.g. census data for your region or viewing figures for particular types of television programme.

You then need to present results in appropriate ways, including good use of:

- cell formatting, such as colour and borders;
- drawing tools and graphic images;
- charts and line graphs.

You need to make good use of macros to simplify the use of the spreadsheet, including macros that:

- replace multiple key depressions for a required action;
- enable or simplify data input;
- produce printed or screen reports.

You need to ensure the accuracy of your results by testing the formulae in your spreadsheet to ensure they generate the expected results.

3.2.6 Presentation of the Results of an Investigation

You need to combine different types of information from different sources into a coherent presentation, including:

- text both created by you and from existing sources;
- graphics from websites and other sources;
- numerical data from spreadsheets;
- graphs and charts;
- results of database searches;
- hyperlinks to other information sources.

You need to understand the importance of checking the accuracy and currency of the information and of acknowledging the sources used.

3.3 ASSESSMENT EVIDENCE GRID

Please see over

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What you need to do:					
<p>You need to produce: a presentation of the results of an investigation, including the use of a spreadsheet to analyse numeric data, along with a report on the sources and methods used to find information,</p> <p>Your evidence needs to include:</p> <p>a: [AO3] the selection and efficient use of search engines to find information required [10];</p> <p>b: [AO2] an explanation of the impact of the availability of electronic information on individuals and society [7];</p> <p>c: [AO1] information accessed from large websites [5];</p> <p>d: [AO1] the use of databases to find required information [5];</p> <p>e: [AO1] the use of spreadsheet software to analyse numeric data and present results [10];</p> <p>f: [AO1] different types of data combined to present the results of the investigation [5];</p> <p>g: [AO4] an evaluation of the methods used to find information and present the results [8].</p>					
How you will be assessed:					
Task	Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
a	AO3	You identify the information required, select a search engine and use its search facilities to locate the information; [0 1 2 3]	you identify the information required and use the advanced search facilities of more than one search engine to locate the information, comparing the results obtained; [4 5 6 7]	you identify the information required, select the most appropriate search engine and use efficient methods, including the use of logical operators to locate the information. [8 9 10]	/10
b	AO2	You make straightforward comments on how the availability of information affects people and situations you are familiar with, such as you and your family; your report may contain errors in spelling, punctuation and grammar; [0 1 2 3]	you explain clearly how the availability of information affects society in general and individuals within it, including people and situations outside your normal experience; your report will contain few spelling, punctuation and grammar errors; [4 5]	you explain in detail how organisations now communicate with individuals and society and the effect on those who do not have (or want) access to ICT; your report will be consistently well-structured and there will be few, if any, spelling, punctuation and grammar errors. [6 7]	/7
c	AO1	You access the required information with some help; [0 1 2]	you access required information independently, using menus, navigation bars etc.; [3 4]	you access required information independently, using an internal search engine. [5]	/5
d	AO1	You use search criteria involving relational operators to obtain information from at least one local or on-line database and evidence your searches; [0 1]	you use complex search criteria including relational and logical operators to obtain information from local and on-line databases and present results; [2 3]	you use complex search criteria including relational and logical operators to obtain information from local and on-line databases and present results as reports. [4 5]	/5

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Task	Assessment Objective	Mark Band 1	Mark Band 2	Mark Band 3	Mark Awarded
e	AO1	You create a suitable spreadsheet layout to carry out simple analysis of numeric data and provide suitable printed or screen output that makes appropriate use of cell formats, charts or graphs, page or screen layout and graphic images; [0 1 2 3]	you show a good understanding of spreadsheet functions and formulae by using them to carry out complex analysis of numeric data, using macros to speed up the input of data and the production of results; [4 5 6]	you create a well-designed spreadsheet to carry out complex analysis of numeric data, testing the spreadsheet thoroughly to ensure the accuracy of the results obtained. [7 8 9 10]	/10
f	AO1	You produce a presentation that combines at least two different types of data from a at least two sources, listing the sources used; [0 1 2]	you produce a presentation that combines at least four types of data from at least four different sources, listing your information sources in an appropriate form; [3 4]	you produce a well thought out presentation that uses at least six types of data effectively to present the investigation results from at least six different sources coherently; you list your information sources in a detailed bibliography. [5]	/5
g	AO4	You comment on the effectiveness of the methods you used to find information and present results; [0 1 2]	you clearly identify good and not so good features of the methods you used to find information and present results; [3 4 5]	you show that you identified strengths and weaknesses in both your initial searches and your presentation of results; you will show how you refined them to meet the purpose more closely, suggesting how you might approach a similar task in future. [6 7 8]	/8
Total mark awarded:					/50

3.4 GUIDANCE FOR TEACHERS

3.4.1 Guidance on Delivery

Candidates need to be familiar with:

- using search engines efficiently to obtain information from large websites;
- using databases to find required information;
- using spreadsheet software to analyse numeric data and present results;
- combining different types of data to present the results of an investigation.

Candidates need to experience a variety of public service websites to be familiar with the type of information that they hold.

Candidates need to be confident with each of these skills before they are ready to undertake a major task.

The order of teaching different topics is unimportant. What does matter is that candidates see that the presentation of the investigation is as important a part of the process as the researching of the data.

Candidates need to choose appropriate techniques for finding information, such as database queries and effective use of search engines, and then use the relevant results of their searches to present their findings.

A variety of techniques for analysing and presenting data using spreadsheets need to be taught so that candidates are able to select and use the most appropriate for their purpose.

The importance this unit attaches to accuracy and suitability should ensure that candidates spend much time thinking about the quality of what they wish to communicate and then presenting it simply and clearly.

3.4.2 Guidance on Assessment

It needs to be stressed that you determine only the *mark* for a candidate's portfolio evidence and not the *grade* which will be determined by OCR.

Regular, early and constructive feedback to candidates on their performance is essential and crucial. Help with planning and structuring their portfolio work in a logical manner throughout the course will lead to better understanding of their work and is likely to achieve higher marks.

Giving candidates deadlines for the completion of various sections of their work, and encouraging them to adhere to them, is also essential if candidates are not going to rush to complete and possibly finish up with marks below their potential.

You need to mark each portfolio according to the assessment objectives and content requirements in the *Assessment Evidence Grid* (Section 3.3).

The information on this *grid* will eventually be transferred onto a *Unit Recording Sheet* to be attached to the front of each candidate's piece of work at the point when the work is submitted for moderation. A *Coursework Administration Pack* will be supplied, containing all relevant *Unit Recording Sheets*. Where marking for this unit has been carried out by more than **one** teacher in a centre, there must be a process of internal standardisation carried out to ensure that there is a consistent application of the criteria as laid down in the *Assessment Evidence Grids*.

Each row in the grid reflects the development of an assessment objective from a task or sub-task in the banner (there may be one or more assessment objectives to any particular task/sub-task).

The maximum mark for each *strand* of work (each row) is shown in the far right-hand column of the grid and this maximum mark is further broken down into a number of mark bands across each row with a range of descriptors.

You use your professional judgement to determine which descriptor in a strand (row) best suits the candidate's work and from the range of marks available within that particular mark band, you circle the mark that best fits the work. You then record this mark in the column headed *Mark*.

You should use the full range of marks available. You must award *full* marks in any strand for work which *fully* meets the criteria. This is work which is the best one could expect from candidates working at AS level.

Only **one** mark per strand/row will be entered. The final mark for the candidate is out of a total of **50** and is found by totalling the marks for each strand of work.

The further guidance below clarifies the criteria in the *Assessment Evidence Grid* and will help you to determine the appropriate mark to be awarded for each strand of work.

Amplification of Criteria			
Task	AO	Mark Band	Characteristics of the work one may expect to see at this mark band can be summarised as follows:
a	AO3	1	Having identified the information they require, candidates use the standard search facilities of a single search engine to locate it; candidates awarded the lowest mark require some assistance to select the most appropriate sites from the search results; candidates awarded the highest mark select the most appropriate sites independently and begin to recognise the limitations of this method – screen prints and witness testimony provide suitable evidence of what the candidate has done;
		2	candidates search for identified information using at least two different search engines – they use the advanced search facilities provided to narrow down the search results – suitable screen prints evidence the searches carried out; candidates compare the results obtained from the different search engines; the mark awarded depends on the number of different search engines used, the selection of appropriate advanced search facilities and the quality of the comparisons;
		3	candidates use their comparison of different search engines to select the one that is most appropriate to find the identified information; candidates then use a range of methods, including the use of logical operators, to locate the information as efficiently as possible – screen prints and witness testimony provide suitable evidence of the search methods used.
b	AO2	1	Candidates explain the effects of the availability of information in personal terms, such as their ability to access information on this qualification by accessing the OCR website, or the ability of their parents to find train or flight information and book tickets on-line;
		2	candidates broaden the scope of their explanations to include individuals and society in general;
		3	candidates include in their explanations the increased use by organisations of e-mail, websites and other ICT to communicate with their customers individually, and with society in general, through ICT-based advertising; they consider the effects on those who do not have (or want) access to ICT.

Task	AO	Mark Band	Characteristics of the work one may expect to see at this mark band can be summarised as follows:
c	AO1	1	Candidates access large public-service websites but need some help to locate and download the information required – screen prints and witness testimony provide suitable evidence of what the candidate has done;
		2	candidates independently use the facilities provided by large public-service websites, such as menus and navigation bars, to access and download the information they require – screen prints and witness testimony provide suitable evidence of what the candidate has done;
		3	candidates use internal search engines provided by large public-service websites to locate and download the information they require – screen prints and witness testimony provide suitable evidence of what the candidate has done.
d	AO1	1	Candidates obtain information from databases available on local drives, including network drives and CD-ROM, and large on-line databases by carrying out simple searches involving relational operators; evidence of searches may be through annotated screen shots;
		2	candidates use logical operators (AND, OR, NOT) to obtain the information they require from local and on-line databases; evidence of searches may be through annotated screen shots;
		3	candidates use logical operators (AND, OR, NOT) to obtain the information they require from local and on-line databases – they use the report facilities provided by the DBMS to present their findings.
e	AO1	1	Candidates carry out straightforward analysis of numeric data, such as finding the maximum, minimum and average values and comparing these graphically for different data sets – they use appropriate cell and presentation formats and produce page or screen layouts for results that are clear and easy to read;
		2	candidates use spreadsheet facilities to carry out more complex analysis of numerical data (e.g. calculating the annual percentage change in viewing figures for different television channels for the last ten years); they use macros to automate, for example, the copying of data from one place to another or the display of a particular area of the spreadsheet that shows a chart;
		3	candidates create spreadsheet layouts that clearly separate the results from the input data, either using different areas of the same sheet or using different sheets in a workbook with macro buttons to move to the relevant area; candidates also use colours and borders to improve the visual impact of the spreadsheet; candidates test all formulae and functions used by entering simple values and comparing the results obtained with those obtained manually or by using a calculator.

Task	AO	Mark Band	Characteristics of the work one may expect to see at this mark band can be summarised as follows:
f	AO1	1	Candidates combine two or three types of data, such as text, tables and charts, from two or three sources, such as one or two websites and their spreadsheet, in their presentations – information about sources is limited to the URL of the sites visited;
		2	candidates combine four or more types of data from four or five sources in their presentations; different types of sources will be used – information about sources is grouped according to type, e.g. websites are listed under one sub-heading and publications under another;
		3	candidates use at least six different information sources in the presentation of their investigation results; candidates consider carefully how the information needs to be combined so that it is presented in a logical order to make the final presentation coherent, including a suitable conclusion – information about sources is precise, e.g. including the complete URL for the web page containing the information and additional information such as author and date where available.
g	AO4	1	Candidates make brief comments on how effective each method used to find information and present results is and suggest simple improvements to some of them;
		2	candidates' evaluations consider both good and not so good features of each method used to find information and present results; candidates provide sensible suggestions as to how each method could be improved;
		3	candidates show evidence of evaluation through the refinement of their work as it progresses; candidates identify the strengths and weaknesses in their initial search strategies and explain how these were refined to meet the purpose more closely; final evaluations include consideration of how a more efficient approach might be adopted for similar tasks in future.

3.4.3 Resources

Textbooks	Heathcote RSU <i>Further Excel</i> Payne-Gallway 2000-2002 190 446 704 0 Kent P <i>The Complete Idiot's Guide to the Internet</i>
Websites	http://uk.weather.com/ http://www.baa.com/ http://www.bbc.co.uk/ http://www.learnthenet.com/english/index.html http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/FindInfo.html http://www.nationalrail.co.uk/ http://www.nhsdirect.nhs.uk/ http://www.statistics.gov.uk/ http://www.ukonline.gov.uk/Home/Homepage/fs/en http://www.visitbritain.com/