

# Introduction

The GCSE in **ICT** (Double Award) is a vocational GCSE that is equivalent upon completion to two GCSEs.

It has been designed to provide a broad educational basis for further training, for further education or for moving into employment within the ICT sector.

The course itself consists of three compulsory units which are equally weighted. Two units are assessed 'internally', while the third unit is assessed externally through a written test. Which of the three units is assessed externally varies between the Examination Boards.

All three units require knowledge and analysis of organisations within the ICT sector.

## **The Applied ICT GCSE consists of three units;**

### Unit 1

#### **Tools and Applications**

### Unit 2

#### **ICT in Organisations**

### Unit 3

#### **ICT in Society**

The three units are very inter-dependent and all offer opportunities for support from business.

This new GCSE started in September 2002 and teachers are under great pressure to find appropriate 'real' examples of the use of ICT and arrange visits and speakers to allow their students access to the information they require.

This guidance should help provide EBPs and employers with an understanding of the issues and level of depth that needs to be covered to enable students to specifically meet the requirements for their coursework. With the variation in the externally assessed unit between the boards however, EBPs must ensure that they are aware of the purpose of the links that they are making. Supporting young people with exemplar material in preparation for an external exam in one unit will be very different to their needs in building individual portfolios of evidence for internal assessment in the other two.

# Unit I

## Tools and Applications

In this unit students will learn how to use a range of software applications likely to be found in local companies. These support;

- WORD PROCESSING
- PUBLICATIONS AND PRESENTATIONS
- SPREADSHEETS
- DATABASES
- MULTIMEDIA
- WEB BROWSERS AND E-MAIL
- CAD/CAM

In addition they must be aware that some activity within a company might require specialist tools such as those associated with;

- Capturing and editing graphic images,
- Automating and controlling processes,
- Computer aided design,
- Monitoring and measuring data.

As the students build capability with these software tools they need to explore and understand the context in which they are used in the world of work. Specifically, they must try to answer two questions;

- In what type of business activity is a particular software package usually used ?
- What facilities within a software package make it the best choice for the type of business activity in which it is found ?

The notes that follow are directed at those building links between business and employers. They are intended to identify sources of evidence from the workplace which will help the student answer the questions above and better place their skills with software packages in the context of a real working environment.

# Unit 1

## WORD PROCESSING

### *Explanation of Term*

The wordprocessor is probably the most common ICT application in use in business. Essentially used to manipulate text, the wordprocessor has become more powerful offering greater control over presentation and now able to draw information from other ICT applications such as a database.

***Microsoft Word is probably the most common in use.***

Different uses include;

- The creation and manipulation of a multitude of day to day business documents, particularly the use of templates, set layouts, pre printed stationery etc.
- Providing a standard 'style' to the business document
- Supporting complex layout needs such as tables of information
- Combining a master document with a database of information

### *Factor/Evidence*

Students need to see a large number of examples of the wide range of documents produced using a word-processor together with explanations of how the documents are constructed using appropriate facilities in the wordprocessor.

It would be very helpful if some of these documents could be provided as computer files, readable by the word processing facilities within the school or college. Many businesses may not be able to provide original copies of documents as computer files however. Given the document as an example on paper, the school should be able to reconstruct the document on their own word-processing system over time, building a 'library' and perhaps sharing these with others.

Some companies will achieve 'enhanced' presentation of their documents by using pre printed stationery. Students will need to have the opportunity to see how pre-printed stationery together with typical office printers can produce an appropriate output on paper, offering perhaps multicoloured effects and graphics.

### *Types of Companies*

Most companies with a computer will use the word processor.

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# Unit I

## *Generic examples of questions for companies*

- Does the company have a set of word processor 'templates' as standard layouts for particular communications with customers, employees, agencies etc ?
- Does the company have examples of a range of documents it produces where the presentation of the document is particularly enhanced using the word processor's facilities, such as a leaflet, flyer etc ?
- Does the company have examples of documents produced on the word processor that present complex layouts, such as tables of data ?
- Does the company have examples of a standard document that draws part of its content from a database such as a mail-merge ?
- What word processor does the company use ? What version is in use ?
- Can an employee, who makes good use of the word processor, list some tasks that the software package is particularly good at and some that it is less good at ?

## **PUBLICATIONS AND PRESENTATIONS**

### *Explanation of Term*

In some cases the extra facilities provided by a word-processor to improve the presentation of the final document is insufficient. In this case the company might use a purpose designed software application to produce high presentation quality documents.

Microsoft Publisher, Aldus PageMaker, Quark Express are all examples of software applications that a company might use to 'desk top publish' documents to a high level of presentation quality, probably using colour, graphics, images and complex layouts.

A company may wish to present information through a projected image onto a screen, like a slide show rather than on paper. In this case they will choose a software application that enables them to build the presentation, testing it on the computer before using it in front of an audience.

***Microsoft PowerPoint is a very popular package offering these facilities.***

### *Factors/Evidence*

There may be some variety in the packages used by a company to produce a publication. Some will be used to produce single flyers or small brochures, others capable of managing the publication of a whole book. Most will support sophisticated manipulation of text, colour, graphics and the import and use of images.

# Unit 1

The output from a PowerPoint presentation can be printed onto paper for further study but obtaining the original file would be very useful, particularly to help students understand how the overall 'look and feel' of the presentation is achieved, not simply trying to use all the facilities that the package offers in any one presentation. Whilst it may be possible to obtain some examples, the original desktop publishing files will probably be incompatible with school based software. Students are surrounded by 'publications' however, and could collect and collate a useful set for further study. As with presentations, any publication will be 'designed' and they will benefit from studying layout design to help them choose when and where to use the considerable facilities offered by a desktop publishing application.

## *Types of Companies*

Many larger companies will outsource the design and printing of publications but might retain some capability for in-house or less critical publications. Smaller companies may find it economical to retain this capability within their own staff however.

Marketing and advertising companies will access sophisticated publication software to support their client's needs. Newspapers and magazines will use layout applications to produce the entire publication often linking journalists directly into the system.

Many employees in companies who have to make presentations to clients and/or departments will use PowerPoint or something similar as a presentation tool. Avoid those areas however where what is likely to be presented is confidential or too complex. Sales and marketing to clients may well prove to be the most useful and interesting.

## *Generic examples of questions for companies*

- How does the company design and construct reports and publications ?
- How does the company produce leaflets, brochures and posters ?
- Does the company outsource the design and construction of its publications ? How does it get the content to the design company it contracts with ?
- Does the company have examples of publications, brochures, leaflets and posters it designs and constructs ?
- Does the company have examples of sales or marketing presentations ?
- Does the company have a publications department or section ?
- What software does the company use for publications ?
- What software does the company use for presentations ?
- Does the company train its staff to build publications or presentations ?
- Does the company have special hardware to support the construction of publications, such as document scanners or digital cameras ?
- Where does the company acquire images from ? What equipment does it use ?
- Does the company have a house-style ? Is the house-style published in a guide ?
- Why has the company chosen the software it has ? How does it fit in with their specific needs ?

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## SPREADSHEETS

### *Explanation of Term*

Most observers will associate the use of the spreadsheet with the finance functions of a company. Although this is probably true, examples can be found elsewhere where a company needs to 'model' a situation such as in engineering or scientific applications. Modelling future sales trends, stock levels and some resource booking functions can be assisted by the use of a spreadsheet, and its worth looking for a broader range of functions than that typically offered by just a financial spreadsheet.

Microsoft's Excel has been the most common spreadsheet package for some time. It performs the basic spreadsheet function and offers lots of enhancements to enable it to be used with less traditional applications needing special functions and capabilities.

### *Factors/Evidence*

Once again, access to the underlying computer files for particular spreadsheets may be difficult to get hold of because they may contain sensitive or confidential data. The spreadsheets will however offer some opportunity to print their output so as to show the broad function of the package and the type of information being manipulated to be examined by students. Some companies may offer access to older data, such as last year's figures or, with notice, may make a copy of a file available with sensitive data removed or changed to protect their confidentiality.

Many students will find it difficult to understand what the spreadsheet offers other than a convenient way to 'arrange' information. The evidence gathered needs to include a clear statement by the employee as to the benefits of using the package. Layout of tabulated data will not normally be enough. The employee needs to emphasise how the spreadsheet, at the very least, is saving the repetition of standard calculations, undertaking very complex calculations and enabling the employee to employ 'what if' strategies to find the optimum values for factors which impact on a process within the company. Examples might include;

- The impact on profits of a 10% rise in the price of raw materials used to make many thousands of products.
- The analysis of complex statistical data used as part of some marketing research.
- Optimising the dimensions of a product to reduce waste material in production.

### *Types of Companies*

The potential for the use of a spreadsheet can be associated with most companies that use a computer.

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## *Generic examples of questions for companies*

- Does the company have a set of spreadsheet 'templates' as standard layouts for particular functions, eg cost calculations, product lists ?
- Does the company have examples of a range of spreadsheet uses that cover simple data manipulation through to complex calculations ? Could some printouts of these be made available ?
- Does the company have examples of spreadsheets that use a wide variety of functions other than; +-x/ ? Are any of them available to take away ?
- Does the company have examples of the use of the spreadsheet that produces a graphical output
- What spreadsheet does the company use ? What version is in use ?
- Can an employee who makes good use of the spreadsheet list some tasks that the software package is particularly good at and some that it is less good at ?

## **DATABASES**

### *Explanation of term*

The Database will appear in a wide range of guises within a company. It is probably the core software application that has been developed the most, making it almost unrecognisable and taking on many of the functions of other packages including some spreadsheet and presentational capabilities.

Most companies will wish to collect, organise and manipulate data and will therefore employ a database to support this function.

Some databases will be programmed to meet the specific need of the employer. In many cases employees will have little opportunity to get 'behind' the database with most functions accessed through menus and predefined functions. Such dedicated databases are common and offer high security with ease of use by staff. These examples will allow examination by students in terms of their application and interface with the user, however it will be almost impossible to gather information about any underlying structures of data and database function. Such databases are usually built by an agency external to the company and will offer useful but limited insights into database design. Examples tend to be those where the database uses are predictable and unlikely to vary on a day to day basis. A purpose built database might support; *stock control, hotel room bookings or a product catalogue.*

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Other databases may make use of a general database software application which is 'focussed' on a specific activity. Even in these cases the application will often be presented as menu driven for employees, requiring little understanding of the working of the database. This means of database design is better suited to companies which might need to ask different questions of the database each day and therefore must have some capability to access the underlying structures and functions. In some cases an employer might grant access to an employee, who may have some responsibility for database maintenance. They will have greater access to the database software enabling the student to understand more about the structure and form of the database. Examples here might include; managing research data, a technical database, medical uses.

***Microsoft's Access is a powerful database application, which lends itself to be utilised to meet an employer's specific requirements.***

## *Factor/Evidence*

It will be difficult to gather evidence in support of database function. Most evidence will focus on data entry and output in reports, but this may be restricted due to confidentiality. Interviews with employees may result in evidence supporting some of the more complex functions of a database.

## *Types of Companies*

Most companies will have a need to manipulate information and will therefore offer limited access to their use of a database.

Looking for an example of a dedicated database and one built from a general database application would be useful.

Companies storing data which includes information on individuals will not normally be able to offer samples of screens showing such data. Look for a company where they might be storing data on some products or service activities.

## *Generic examples of questions for companies*

- Does the company use a database to support the manipulation of information? If so, is it a dedicated database or one constructed from a standard application like *Microsoft Access*.
- What type of information is stored in the database? Are there examples of different forms of data such as text, number, dates etc? Could some screen shots of the data entry and/or report screens be made available?
- How is data entered into the database and what checks are made to ensure its accuracy?
- How much data does the database hold? Is this near capacity or can it hold lots more?
- How can the database be used to manipulate the information within it? What types of data manipulation is undertaken each day?
- Who uses the database and why? What do they think the database does well and less well? Which fields on the data base do you use the most and why?
- What data is used as a basis to search the database and what output is offered?
- Where is the data stored? Is it local, on a server in the building or elsewhere?
- How is the data backed up and kept secure? What security is imposed to allow only authorised users to see the data?
- Is there any need to 'maintain' the database? Who does this and what does it entail?
- Does the company have to register its database under the Data Protection Act?
- Has the company ever purchased database information?

# Unit 1

## MULTIMEDIA

### *Explanation of term*

Few companies will construct multimedia presentations through their own staff and resources though some may use multimedia in support of, for example, providing customer information and staff training.

There are many software applications that will allow the user to bring together text, audio, images, graphics and video to make a presentation using all or some of these forms of information. The outcome will often be much more than a linear presentation of information, it can result in a means by which the user can select the information they wish to see in the order they like and in some cases the presentation 'sensing' the progress of the user, adjusting the options for viewing as they progress.

The most common examples of the output of a multimedia application are web pages viewed locally or over the internet. Many multimedia packages will offer output as 'web enabled' since the web is a fast growing means by which to deliver such multimedia applications once they have been constructed.

### *Factor/Evidence*

Good design is a key to successful multimedia construction and the employer may be willing to offer access to the early designs of the proposed multimedia presentations. These designs may be diagrams showing how each 'page' of the presentation is linked and this will serve to illustrate the design process and in particular the proposed navigation.

The components of multimedia include text, audio, images, video and graphics and the employer may allow some of these to be taken away as computer files for use by students, but some will be bound by copyright. Some companies may have enhanced graphics capability with both still and video images and evidence of this activity would be very beneficial to students.

Viewing the final product will offer students an opportunity to see how a plan manifests itself in a finished presentation. They will be able to visualise the navigation and spot the individual components making up the multimedia. The overview will encourage them to sense the overall 'design' of multimedia, emphasising its creative as well as technical perspective.

### *Types of Companies*

Companies developing multimedia are limited in number, specialist and unlikely to be easily accessed since they will often be small and under pressure to meet customer needs. However, with advanced warning and a clear brief they may be able to offer examples and access to specialist staff to help meet the need for evidence in this area.

Companies supporting 'web design' will have the necessary activity to support this section and the 'web design' service will be the most easily recognised characteristic to help identify them. Some companies in marketing, advertising and promotion may have the required activity as will those offering specialist design and implementation for 'training materials'.

Companies specialising in video production may have some enhanced graphics capabilities using computers.

Colleges and HE institutions will usually have such expertise and may be engaging students in courses which would include multimedia design at the level needed.

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## *Generic examples of questions for companies*

- Does the company design multimedia presentations from scratch using a customer's ideas or brief? How is this achieved, and are there any examples of early design ideas that can be taken away?
- Does the company have examples of the components of a multimedia application such as short pieces of video, audio and graphics? How are these acquired and processed ready for use? What equipment is needed?
- How can multimedia be best 'designed'? Are there any basic rules that the company would suggest to students?
- What is multimedia mostly used for? Can the company offer a list of clients they have recently undertaken work for? Can the company suggest some good web sites to look at for design ideas?
- What skills do the employees of a multimedia company have? Which are creative and which are technical?
- How is multimedia delivered? On CD or the net? What are the comparative advantages and disadvantages?
- How does the company use multimedia? Why is it preferred to more traditional forms of conveying information? What are its disadvantages?

## **WEB BROWSERS AND EMAIL**

### *Explanation of term*

A web browser is a software application that allows a user to access information made available across the internet. It provides the framework through which web based data is assembled for the user to 'see' using different layouts, graphics, colour, audio, video and other functions. There are several 'browsers' available including **Microsoft's Internet Explorer**.

Email is also a software application, which can enable communication across the internet, supporting the transfer of information from one user to another and managing the user's past messages, email contacts and preferences.

### *Factor/Evidence*

The effective transfer of information across the internet is a fast growing activity for many companies. Some will offer examples of the use of the internet to convey information to their customers and prospective customers. In some cases they will be examples of those companies engaging in e-commerce, offering customers the opportunity to purchase their products or services across the web.

Many companies will access web sites for information they need to support their own business activity. This may be incidental, such as looking up the best car route to a client on a web site supporting location finding, or another company will be undertaking substantial product research accessing many web sites over long periods of time.

An increasing number of companies will use email as the main means of communicating with customers, employees or other sites at which they have companies - perhaps across the world.

In each case there is the possibility to collect evidence of such activity. This may be in the form of website addresses, screen shots of web pages, employee interviews or sample emails.

# Unit 1

## *Types of Companies*

Many different type of businesses will use the internet in the ways described. However, a range of use should be established and some research on the internet first may reveal the local companies making best use of this means of communication.

Access to a company engaged in e-commerce would be valuable since it is the most advanced use of the technology and presents the young person with many perspectives for further investigation.

## *Generic examples of questions for companies*

- Does the company have its own website ?  
What is its web address ?
  - What does the company use the website for ?  
How often is it updated and by whom ?  
Where is it hosted ?
  - How many 'hits' does the website get,  
per month, per year ?
  - Does the company have plans to extend and/or  
change the website ?
  - How effective is the website when compared to  
other forms of marketing ?
  - How does the company know who is looking at its  
website ?
  - Does the company use or intend to use the  
website to sell its products, ie e-commerce ?
  - What are the security implications for a website  
when its used to take customer orders ?
- How is the website 'found' through search engines ?  
What are its 'key' words to help locate it ?
  - What web sites do employees access regularly,  
what information does it provide ?  
Why is this preferable to more traditional sources  
of information ?
  - Do all employees have access to the internet ?  
Does this present any problems ?
  - Does the company use email to communicate with  
customers, employees or other sections of the  
company ?
  - What types of information is passed using emails ?  
Can the company provide some examples ?
  - Do all employees use email ? What for ?
  - Does the company have a policy for employees  
using the internet and/or email to help avoid abuse ?  
Does the company monitor internet and/or  
email use ?

# Unit 1

## CAD/CAM

### *Explanation of term*

Computers may be used by a company to support the process of product design and this may be known as Computer Aided Design (CAD). An example of this could include a company designing printed circuit boards (PCBs), using a package to help draw and design the product and in some cases testing the product at its design stage suggesting and implementing improvements.

Some companies will be able to communicate the design directly to machines that can manufacture the product. This is known as Computer Aided Manufacturing (CAM).

### *Factor/Evidence*

It is important that students understand that CAD is not simply a 'drawing aid' and that some CAD packages can improve designs and undertake to test the product 'virtually' before it is ever made. Many will produce production requirements including the list of materials needed as well as high quality drawings and perspectives aiding the manufacturing and maintenance process at a later stage.

In some cases the CAD process will communicate the manufacturing instructions directly to machines elsewhere in the company. This shows how computers at one end of a process are recognisable as PCs but at the manufacturing end may not have a conventional keyboard and screen, being instructed through a networked link by another computer. In these cases many such devices might be controlled centrally where the manufacturing process is monitored.

This is very difficult to acquire evidence for and is probably best represented through photographs, diagrams, employee interviews and a visit by students to the employer.

### *Types of Companies*

More modern engineering and/or manufacturing companies may employ CAD/CAM technologies.

### *Generic examples of questions for companies*

- Does the company use software applications to aid the design of new products? If so, what packages are used and for what type of product design?
- Does the application provide output in the form of drawings and diagrams?
- Does the application analyse and provide printed reports for manufacturing materials use, costs, timescales etc?
- Does the company use software applications to test new designs before products are constructed?
- What employee training is required to use these ICT applications?
- Can the ICT design applications communicate directly with machines elsewhere in the company, passing programming information ready for manufacturing to begin?

# Unit 2

## ICT in Organisations

In this unit the students learning will include;

- HOW ORGANISATIONS USE ICT
- WHY ORGANISATIONS USE ICT
- THE MAIN ICT COMPONENTS UTILISED

The unit *may* be internally assessed and if so, will require the student to build a portfolio of evidence to demonstrate their understanding. The evidence for the portfolio may come from case studies or as a result from visits to a company, or both.

The notes that follow are directed at those building links between business and employers. They are intended to identify sources of evidence from the workplace which will help the student answer the questions above and better place their skills with software packages in the context of a real working environment.

## HOW ORGANISATIONS USE ICT

### *Explanation of Term*

Whilst the extent to which any organisation uses ICT varies, for many companies ICT has been heavily integrated into the function of the organisation and they have become dependent upon availability, reliability and ease of use.

In answering the question; **how does this organisation use ICT?** The student needs to match the benefits offered by a particular component of ICT (whether software or hardware) with the **needs** of the organisation in a particular area. In this way the student can describe the **deployment** of ICT throughout the organisation.

The organisation may need to be presented in terms of its functions to help understanding, this might be **sales, purchasing, finance and operation**. Organisations such as hospitals however may be better described differently.

Once the deployment of ICT is established the student will need to explain how **each** component interacts with the day to day processes of the company. It is not enough to simply identify, for example; **a database application running on a PC used to maintain stock records**. The student should consider how this deployment functions addressing issues which include;

- Whether a particular deployment of ICT is used to support **information, communication** or **function**.
- The **context** of the deployment such as the nature of the department or section that it is found in, what is done there, numbers of employees, special physical arrangements etc.
- How the software is **configured** to meet the needs of the process it is supporting, for example;
  - the standard of the data that is input and what format is used to store the information,
  - the ways in which the data is manipulated to secure the desired output,
  - the output that is provided in the form of, for example; reports, files, machine control.

# Unit 2

- How the software and hardware is ***maintained*** to ensure its reliability, for example;
  - What validation is implemented to ensure the reliability of the output of the application,
  - How data is backed up to avoid loss should a failure occur,
  - How the hardware is maintained, expected lifetimes and the plans to address hardware failure,
  - How systems are upgraded and improved.
- How employees are ***supported*** in the use of the ICT, including;
  - How employees are inducted and trained,
  - The security applied to use of ICT by employees,
  - The employees health and safety considerations when using ICT.

## *Factor/Evidence*

The requirements of this unit require extensive access to information about the use of ICT in an organisation. It is important to ensure that the employer is willing (and able) to provide information to the depth necessary to meet the standard capable of being reached by a particular student.

In many cases the evidence will be gathered from questioning key employees who are using ICT in a particular setting. However, a deeper understanding will require access to the ICT support personnel.

This will establish which application is used to meet what need. In each case other evidence may become available which could include;

- screen shots showing, for example – data entry requirements,
- printouts showing the data stored before and after processing,
- forms used to gather data and to aid data entry or processing,

- systems diagrams which illustrate the part the specific ICT deployment plays in the scheme of things,
- technical specifications for the hardware and software in use,
- training documentation which might describe the use of the ICT in detail.

## *Types of Companies*

The specification encourages students to compare and contrast the use of ICT across a ***range*** of organisations, such as a commercial company and the health service. However, where this unit is internally assessed through a portfolio of evidence, their investigation may need to be directed into a single named organisation or department.

Companies must offer sufficient depth of use of ICT to meet the needs of the brightest students but, in some cases, limiting their study to one department or section may make this more manageable. If this is the case it is worth remembering that whilst the department might appear suitable for standalone study, the ICT in use might be integrated in ways more difficult to disentangle with other sections and sites.

Companies with a dedicated department supporting ICT use or companies where ICT support is contracted out, may yield more detailed information than smaller organisations unsure of the detail of the systems they are using. This is a generalisation however and some small companies may well have staff able and willing to offer the necessary information.

This unit heavily emphasises the ***application*** of ICT rather than the activity you might find within the ICT sector itself. It may be preferable to avoid companies in the ICT sector since this may confuse students wrestling with the use of ICT as opposed to its development and commercial sale as a product in its own right.

# Unit 2

## *Generic examples of questions for companies*

- What is the flow of information like in the company and at what points is ICT used to assist in processing data? How is the flow of information linked to the way the company is organised?
- What information is collected by the company? What is its source? How is this information collected and in what form? Are examples available?
- How does the company ensure the information it uses is accurate and appropriate? Does it 'test' incoming data?
- What does the company do with the information it collects or produces?
- What ICT packages are used to 'process' the data, what processing takes place?
- What information does the company store, in what form and how?
- What output does the company produce for itself and for its customers?
- How does the company prevent important information being lost?
- Does the company regard its information as confidential?
- How does the company ensure that the information it collects, processes and outputs is kept confidential from some employees and outside agencies?
- How does the company address hardware failures and the impact on the running of the company?
- Where in the lifecycle is the ICT components of the company? How important is it to keep up to date with ICT? What is the priority for the company for improvements to ICT?
- Does the company have its ICT systems developed internally or externally?
- Does the company purchase single copies, multiple copies or site licences for software applications?
- Does the company have hardware and software specifications for their ICT use?
- Does the company have systems diagrams to represent the role of ICT in their organisation?
- Does the company use training materials to help employees make best use of ICT?
- Which software applications are the hardest for employees to use and why?

# Unit 2

## WHY ORGANISATIONS USE ICT

### *Explanation of Term*

This part of the specification for the Applied GCSE asks students to consider why an organisation deploys ICT in support of its activities. The question 'why?' however covers two main considerations; It asks,

- why does the business deploy a **particular** form of ICT in support of a process ?

from the experience of Unit 1 the student can match the functionality of particular computer packages with the need of the business activity. This provides a comparative understanding of the benefits of specific software and hardware configurations against the demands of the business environment. The student might therefore deduce for example, that the choice of a database rather than a spreadsheet was in response to the demands for 'search and retrieval' required by the business process under consideration.

- Why does the company deploy **any** form of ICT in support of a process ?

this question goes deeper and asks the student to consider the benefits that the use of an ICT component offers the company. 'Retrieving data' isn't enough, the student must find out what the comparative benefit is, such as – **the speed at which customer records can be retrieved**. To obtain the maximum mark for this consideration however, this benefit must be linked to a clear company objective, such as the desire to improve customer service – without which business would be lost and the success of the company threatened.

### *Factors/Evidence*

For each deployment of ICT the student should consider the software application in use together with the hardware specification supporting it and justify critically the choice made. Where appropriate, evidence is sought for other applications or methods that may have been tested and rejected. This evidence will in the main be specifications for ICT deployments obtained through the testimony of employees or technical documents.

How each deployment meets the business objectives of the company or organisation may be met through evidence provided by senior employees in the company, perhaps with reference to business plans and other documents which set out the overall objectives for the organisation.

### *Types of Companies*

The comments made previously are also applied to this section.

# Unit 2

## *Generic examples of questions for companies*

- Why has the company decided to use the software applications that it has deployed ? Did the company produce specifications before choosing ? How was the choice made ?
- Does the company consider any software applications currently in use subject to revision in the near future ? Will this simply be an upgrade or a change in the type of application ?
- Does the company feel that there are applications that it uses that could be replaced with different types of software and achieve the same or better ends ?
- What company objectives are met by the use of each software application in the company ?
- How would a major ICT failure impact on the company ?
- What extra application or function of an application would the company most wish to deploy in the immediate future ?
- Does the organisation's business plan make reference to the part ICT plays in meeting future objectives ?
- How does the company decide upon the cost-benefits of using ICT in part of its operations ?

## **THE MAIN ICT COMPONENTS UTILISED**

### *Explanation of Term*

The student must be able to describe the main ICT components of each deployment covering;

- Input devices,
- Processors,
- Output devices,
- Ports and cables,
- Storage devices,
- Networking standards and protocols

In each case the overall capability of the system should be summarised and in particular the capability of the configuration to meet the demands of the task to which it is assigned.

# Unit 2

## *Factors/Evidence*

The student will need to be provided with a thorough description of the hardware and software used in all the parts of the organisation being studied. In larger organisations a key employee (or external contractor) will have this information to hand, however a smaller company may not be fully aware of the specification of the system that they are using.

It is important that evidence is gathered which relates to the *capability* of the ICT components to meet the needs of the company at that location. For example, the student must identify the existence of a printer attached to a computer, but to obtain more marks must point out why the specification for that printer enables it to print the 10,000 copies of a document per day demanded by that section, fast enough, to a sufficient quality, reliably and at low cost. The highest marks will require an assessment of the ICT component to meet an increase in demand beyond that being satisfied.

The company may be able to offer diagrams to show network connections for the section of the organisation, which may help the student consider the networking strategy employed.

Maintenance records and/or asset registers might offer simple lists of the hardware to be found in a section of the organisation.

## *Types of Companies*

The comments made previously are also applied to this section.

## *Generic examples of questions for companies*

- Does the company have a detailed list of the hardware and software deployed within the organisation ?
- Does the company have specifications for each deployment of ICT in terms of minimum performance characteristics ?
- How does the company decide what hardware to purchase ?
- How important is the reliability of the companies ICT hardware ?
- Does the company service its own ICT or does it contract this to another agency ?
- Does the company utilise any different or innovative hardware components particular to the sector in which it works ?
- Are the ICT components within the company connected together through a network ? What type of network is employed ? Is the network connected to a wide area network locally or beyond ?
- Can the ICT components communicate with systems elsewhere through the internet ?
- Which ICT component would the company identify as under the greatest strain from demand at the moment ?
- How does the company intend to improve its hardware configuration in the near future ?
- What is the replacement policy for hardware in the company ?
- What are the health and safety considerations for hardware in the company ?

# Unit 3

## ICT and Society

In this unit the students learning will include;

- WHAT TECHNOLOGIES ARE AVAILABLE TO COMPANIES
- HOW ICT IS USED IN BUSINESS
- HOW ICT HAS AFFECTED WORK STYLES
- LEGISLATION

The unit *may* be internally assessed and if so, will require the student to build a portfolio of evidence to demonstrate their understanding. The evidence for the portfolio will come from a number of sources which will include companies.

The notes that follow are directed at those building links between business and employers. They are intended to identify sources of evidence from the workplace which will help the student answer the questions above and better place their skills and understanding in the context of a real working environment.

## AVAILABLE TECHNOLOGIES

### *Explanation of Term*

The development of ICT is happening very quickly with the rapid expansion of technologies offering companies more and more opportunities to enhance their access to information, data exchange and data processing.

This section examines the impact of available and new technologies on society, including the workplace. Major enhancements are having an impact on the workplace and this includes the role of;

The internet and associated technologies such as e-commerce,

Fast internet connections in the home and the possibilities for home working,

Mobile phone technology and communication with employees,

Digital broadcasting and the opportunities for marketing,

Digital organisers and PDAs and their role in supporting the portable office,

Storage media including DVD and minidisk and the impact on data retrieval,

Touch screen/surface technologies and enabling interaction in new situations.

Individual employers may be accessing these and other technologies to meet specific needs within their sector and should be explored to reveal innovative uses for ICT.

# Unit 3

## *Factor /Evidence*

As part of the analysis of the deployment of ICT in Unit 2 care should be taken to identify examples of the full range of ICT technologies employed within the company. In some cases the use of, for example, mobile phones will not normally be associated with ICT.

The evidence from the company needs to address the suitability of the technology to meet specific needs. In some cases this may offer greater opportunities for critical analysis since the available technology may be quite new, with new ways of operating being explored and tested.

These technologies may have hardware and software attached to them that are unfamiliar when compared to the applications listed in Unit 1 for example. In each case it is important to gather evidence of the nature of the technology in use rather than simply product 'names' or 'brand' names.

## *Types of Companies*

A wide range of companies will be able to offer some experience of using a broader range of technologies.

Companies with large sales teams may be employing technologies that enable an 'office on the move' for their sales people. These same companies may also be using web technology to support e-commerce and home working through faster broadband links.

## *Generic examples of questions for companies*

- Does the company use the internet to sell its products and services ?
- Does the company use the internet to enable its employees and representatives to communicate more effectively ?
- How does the employer ensure the security of data passed over the internet as part of its business ?
- Does the company equip its employees with mobile phones? Is this for voice communication, text messaging, WAP etc ?

# Unit 3

## HOW ICT IS USED IN BUSINESS

### *Explanation of Term*

This part is not the same as the 'how' that appears in Unit 2. It is focused on how business is affected by the use of ICT and how in turn it impacts on customers. The use of ICT has in the past been used to automate manual processes but more than ever ICT offers the opportunity to change the ways in which business operates and relates to its customers and clients.

The students will need to demonstrate their understanding of this impact of ICT. Evidence from the company will help identify the type of opportunity that ICT is offering and whether it relates to customers or function. In some cases longer serving employees may be able to describe how things were done prior to the use of ICT. Changes to working practices will be dealt with in the next section.

### *Factors/Evidence*

Using the evidence gathered through Units 1 and 2 the student should consider each deployment of ICT and question the extent to which the use of ICT is affecting the way in which the company operates. Typical examples might include;

- Selling product and services to customers through the use of web technology. The internet now enables companies to place information about their products 'on-line'. This is changing the way marketing is operating. In some cases customers can use the web site to compare different products or services, make a choice and order on-line. Some systems allow the customer to track the progress of their order over time. Such facilities impact on several functions of the company requiring greater ICT skills and experience in one area and perhaps less employee customer service interaction in another.

- Dependency upon computers holding critical information has often resulted in less information held on paper. This strategy has caused companies to consider carefully their actions should a hardware fault cause the loss of, or temporary interruption of, access to information. They will initiate new procedures to operate this with investment in backup technologies and employees in support.
- Enhanced communication technology now enables a company to route customer enquiries to call centres on the other side of the world. This changes the work pattern of the company and its dependency upon local people as employees and the infrastructure supporting the human resources of the company.
- The world wide web and better access to applications which allow employees to construct high quality advertising and information material, is changing the ways in which business communicates with prospective customers. Employees may now have the capability and resources to undertake design work in-house rather than use external contractors.

### *Types of Companies*

The comments made previously are also applied to this section.

# Unit 3

## *Generic examples of questions for companies*

- Does the company operate a website providing customers with information about products and services ?
- Does the company offer customers an opportunity to order products or services through the website ?
- Can customers track their on-line orders ?
- Can customers compare products and services on-line in detail to ensure they make the right choice ?
- How does the company keep customer information collected over the internet secure ?
- How does the speed of ICT enable the company to offer a better service to its customers ? Would even faster speeds be required by the company, if so where ?
- Has the deployment of ICT enabled the company to reorganise its structure to better reflect the capability the ICT has given the company ?
- Has the company undertaken a new area of work as a result of investing in ICT and skills ?
- Has ICT enabled the company to move some of its operations to other geographical areas ?

## **HOW ICT HAS AFFECTED WORK STYLES**

### *Explanation of Term*

The deployment of ICT has changed the way in which people work. This impacts on factors which include;

- The skills they need,
- The place in which they work,
- The pattern of their working day,
- The way in which they relate to their colleagues and customers,
- The types of job they can do.

### *Factors/Evidence*

The student will need access to evidence relating to people as much as other factors. This will be best achieved through the comments from employees and access to documents relating to staffing, for example – a job description.

Some longer term employees will be able to offer comparative evidence for changes to the ways in which people work, which will be valuable for the student and difficult to obtain from other sources.

Adverts for jobs might provide an insight into the skills and experience employees need.

Some changes to work styles are not directly related to the operation of the company. Indeed, some changing patterns of work may have negative outcomes such as the introduction of email causing employees to spend too much time emailing rather than speaking with colleagues.

### *Types of Companies*

The comments made previously are also applied to this section.

# Unit 3

## *Generic examples of questions for companies*

- What IT skills are needed by employees in order that they can undertake their work ?
- What IT qualifications are required by employees with IT responsibilities within their job role ?
- How has ICT enabled employees to work more flexible hours ?
- How has ICT caused employees to work less sociable hours ?
- How are most communications between employees managed ?  
What proportion is through email ?
- How is most communication with customers managed ? What proportion is through email ?  
Does the company use a call centre ?
- Has ICT enabled employees to work at home or 'on the road' ?
- Does the company use mobile phones and email to communicate with out workers ?
- Do employees use hot desk facilities ?
- Do all employees in offices have a personal computer ?
- How are employees supported with health and safety when using a PC for most of the day ?

# Unit 3

## LEGISLATION

### *Explanation of Term*

Employees and others affected by ICT are protected under legislation enacted by Government. This addresses issues including;

- The health and safety of those using computers and related equipment
- The security and confidentiality of data held on the computer and other storage devices
- The copyright of software and other information installed and used on computers.

Whilst the detail of this and other legislation is not required knowledge for students it is important for the student to see how the legislation impacts on business activity and the responsibility of the employer.

### *Factors/Evidence*

Evidence of ways of working which relate to the various legislative requirements, for example;

- Procedures to ensure that employees using computers are monitored for their health and safety, for example the frequency of eyesight tests for those using a visual display unit for extended periods of the working day.
- The limitations on the amount of data that the employer can keep on customers, the use it can be put to and the length of time it can be kept.
- The means by which the company maintains the software applications on its computers having regard for their licence for the software, numbers of copies that can operate and the use to which it can be put.

### *Types of Companies*

The comments made previously are also applied to this section.

### *Generic examples of questions for companies*

- What procedures are followed to check the suitability of an employee's workstation in terms of their health and safety ?
- What modifications are made, if any ?
- What type of information is stored on computer in relation to customers ?
- Is the company registered under the Data Protection Act ?
- How does the company protect the privacy of its customers ?
- Does the company 'sell on' customer information to other companies ?
- Does the company hold the copyright on any ICT related products ?
- What licenses does the company hold to enable them to use software applications ?
- In what ways does ICT related legal issues limit the business activity of the company ?
- In what ways does ICT related legal issues protect the interests of the company ?