COMMUNICATION

Cambridge IGCSE ICT (0417) • Theory

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Learning objectives

KEY CONCEPTS

- Explain email legislation, policies, security and netiquette
- Use To, Cc, Bcc, forwarding and attachments correctly
- Compare the internet, WWW, intranets and extranets
- Describe blogs, wikis, forums and social networking
- Use browsers, URLs, search engines and information evaluation
- Explain internet protocols and internet risks

Chapter 10 • Visual mind map

EMAIL
Laws • netiquette • security

SEARCH
URLs • credibility • ISP

NETWORKS
Internet • WWW • intranet

COMMUNICATION

OPERATIONS
Cc • Bcc • attachments

ONLINE TOOLS
Blogs • wikis • forums

PROTOCOLS
HTTP • HTTPS • FTP • SSL

10.1 • Email legislation and constraints

KEY CONCEPTS

- Obtain consent where required; provide opt-out and unsubscribe routes
- Avoid misleading subject lines and address harvesting
- Make privacy policies clear to subscribers
- Use acceptable language; avoid abusive or illegal material
- Respect copyright and confidentiality in messages and attachments

Company email policy

Accounts

Business use rules; individual password-protected accounts

Confidentiality

Who may read messages; monitoring and storage rules

Safety

Anti-virus, spam filters, approved devices

Staff training

Clear guidance, consistent tone, enforcement

Email security

Strong passwords

Use mixed characters; protect login credentials

Passive attack

Unauthorised disclosure of message contents

Active attack

Message alteration, malware or denial of service

Defences

Spam filtering, anti-malware and cautious handling

Netiquette • online courtesy

KEY CONCEPTS

- Use polite, concise and appropriate language
- Do not send spam or publish private information
- Check spelling, grammar and tone before sending
- Avoid writing in ALL CAPITALS (can seem like shouting)
- Credit sources and respect other users' views

To, Cc and Bcc

TO

Main intended recipients; addresses visible to other recipients

CC

Copy to interested parties; addresses visible to other recipients

BCC

Copy with hidden recipient list; protects group addresses

Email operations • textbook example

Exercise 10a: identify who can see each recipient list.

Other email operations

Apart from the person you are sending the email to, there are other options available, such as:

- carbon copies (cc)
- blind carbon copy (bcc)
- forward
- attachments.

Carbon copies (Cc) and Blind carbon copies (Bcc)

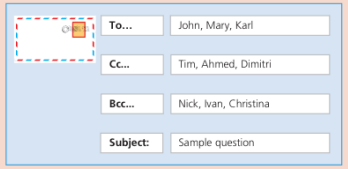
The difference between carbon copies (Cc) and blind carbon copies (Bcc) is that the Bcc address details are invisible to everyone receiving the email, apart from the Bcc recipient. All recipients in a Cc list, however, can be seen by all other recipients.

The use of Cc is really just netiquette; those on the 'To' are the main recipients and those in the 'Cc' list are interested parties.

Bcc is often used as a security measure when using email groups. When sending an email to many recipients, the following is an added security to keep the addresses of everyone safe:

- Put your own email address in the 'To' field.
- Set up an email group containing all the recipients and give it a name; then store this.
- Put this named email group in the 'Bcc' field.
- This will provide some additional protection, because anyone seeing the email (authorised or unauthorised) will not be able to see the email addresses of the individual recipients.

Exercise 10a



1. Which recipients of the email can be seen by John, Mary and Karl?
2. Which recipients of the email can be seen by Tim, Ahmed and Dimitri?
3. Which recipients of the email can be seen by Nick, Ivan and Christina?
4. Who can see that the email was sent to Nick, Ivan and Christina?

Forwarding, attachments and spam

KEY CONCEPTS

- Forwarding may redirect spam and create filtering or blacklisting issues
- Attachments can contain malware; be cautious with executable files
- Large files may exceed email limits; compress or share via links
- Spam is unsolicited bulk messaging; can waste time and bandwidth
- Spam may carry phishing links, viruses or malicious attachments

10.2 • Internet vs World Wide Web

INTERNET

Global network of interconnected networks; supports email, messaging and other services

WWW

Web pages and resources accessed via browsers using HTTP/HTTPS and URLs

Internet structure • textbook diagram

The WWW is a service running over the internet.

» It can have viruses attached or even be part of a phishing scam.
» It can clog up users' inboxes.

Spam is not just a problem for computer users – it can also affect mobile phones. In this case it is usually text messages being send to multiple phones. It is sometimes referred to as 'm-spam', 'mobile spamming' or 'spam SMS'). At the basic level it just annoys people, but with some mobile phone providers users are charged for each message they receive. It then becomes more than just an annoyance!

Link
Look back at Chapter 8 for ways to prevent spam.

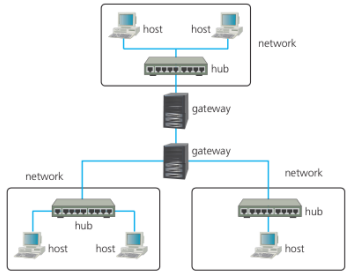
10.2 Effective use of the internet

This section will consider the effective use of networks, such as the internet, intranets and extranets. This will include many of the features of each type of network.

10.2.1 Characteristics, uses, advantages and disadvantages of the internet

The differences between the internet and the World Wide Web (WWW)

The word **internet** comes from **INTER**connected **NET**work, because it is basically a worldwide collection of interconnected networks. The internet as a whole is actually a concept rather than something tangible (that is, something we can touch). However, it relies on a physical infrastructure that allows networks and individual devices to connect to other networks and devices.



▲ **Figure 10.4** Diagram of the internet

In contrast, the **World Wide Web (WWW)** is only a **part** of the internet which users can access using web browser software. The World Wide Web consists of a massive collection of web pages, and has been based on the hypertext transfer protocol (http) since 1989. The World Wide Web is a way of accessing information **using** the internet; so, the internet and the World Wide Web are actually quite different. Table 10.1 summarises the differences.

Internet, intranet and extranet

Internet

Public global network of interconnected networks

Intranet

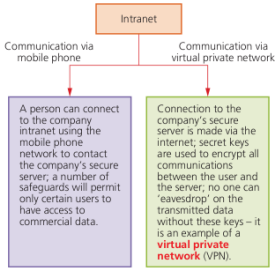
Private organisation network for internal sharing

Extranet

Controlled access for selected external partners

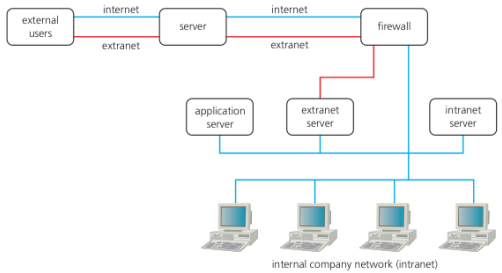
Network access • textbook diagrams

VPN and access controls connect authorised external users.



▲ **Figure 10.5** Connecting to an intranet though a mobile phone network or virtual private network

Figure 10.6 shows how intranets, extranets and the internet can all be connected together. Access to servers behind a firewall is limited for external users.



▲ **Figure 10.6** Connections between internet, intranet and extranet

What are the differences between the internet and an intranet?

- As discussed, the term internet comes from the phrase: INTERconnected NETwork.
- The term intranet comes from the phrase: INTernal Restricted Access NETwork.
- An intranet is used to give local information relevant to the company or organisation; whereas the internet covers everything.
- It is possible to block out certain websites using the intranet; while this is also possible with the internet, it is more difficult.

Blogs, wikis, forums and social networks

BLOG

Posts by an author, usually newest first; readers may comment

WIKI

Collaborative pages; many contributors; edit history

FORUM

Topic-based discussion; moderated or unmoderated

SOCIAL NETWORK

Profiles, messages and shared media within communities

Internet service providers (ISP)

KEY CONCEPTS

- An ISP provides access to the internet
- Customers typically receive an account and connectivity service
- ISP infrastructure can include broadband and fibre connections
- A browser displays web pages and interprets HTML

Browser tools and URLs

Browser tools

Bookmarks, history, back/forward and hyperlinks

URL structure

protocol://domain/path/filename

Example

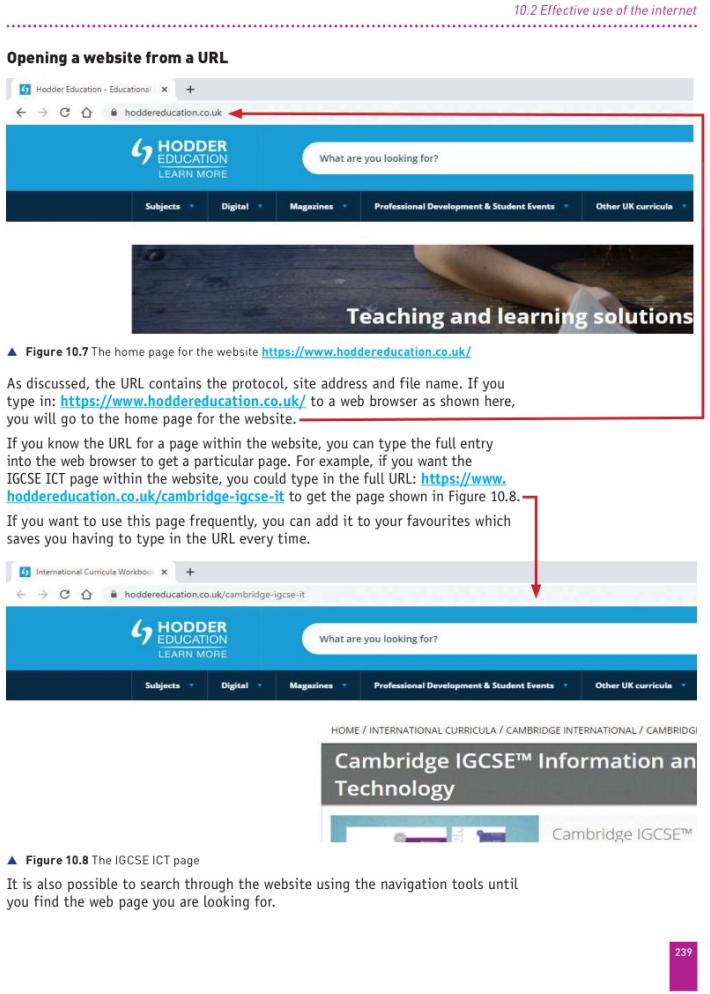
https://www.wailinhtet.com

HTTP 404

Usually means the requested web resource cannot be found

URL and browser • textbook examples

Use address bar, navigation and bookmarks to access pages.



10.2 Effective use of the internet

Opening a website from a URL

Figure 10.7 The home page for the website https://www.hoddereducation.co.uk/

As discussed, the URL contains the protocol, site address and file name. If you type in: https://www.hoddereducation.co.uk/ to a web browser as shown here, you will go to the home page for the website.

If you know the URL for a page within the website, you can type the full entry into the web browser to get a particular page. For example, if you want the IGCSE ICT page within the website, you could type in the full URL: https://www.hoddereducation.co.uk/cambridge-igcse-it to get the page shown in Figure 10.8.

If you want to use this page frequently, you can add it to your favourites which saves you having to type in the URL every time.

Figure 10.8 The IGCSE ICT page

It is also possible to search through the website using the navigation tools until you find the web page you are looking for.

239

Search engines • efficient searching

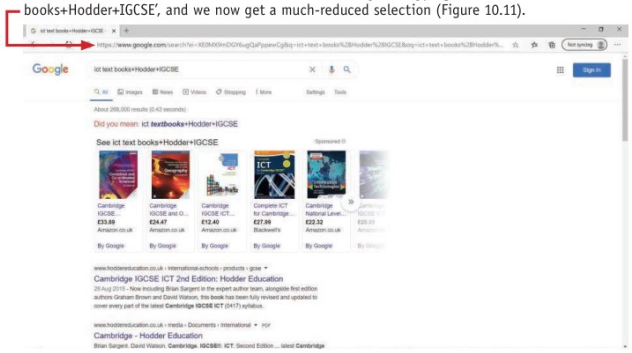
KEY CONCEPTS

- Use specific keywords to reduce irrelevant results
- Refine with extra terms and advanced search options
- A search result is not necessarily reliable or the best match
- Save useful pages and acknowledge sources to avoid plagiarism

Search results • textbook screenshots

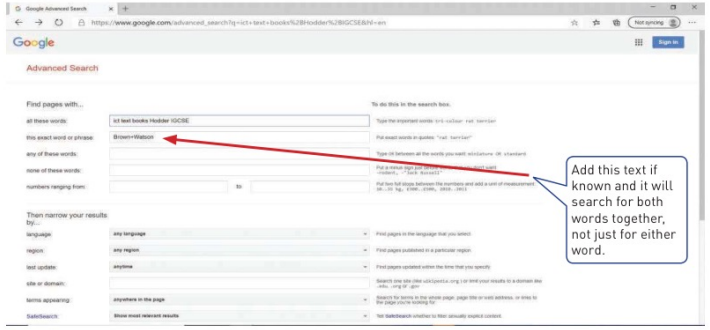
More specific queries can narrow results dramatically.

As you can see, about 86 million 'hits' or web pages have been found. This is a lot of information. We could narrow down the search by now typing in 'ICT text books+Hodder+IGCSE', and we now get a much-reduced selection (Figure 10.11).



▲ **Figure 10.11** Reduced selection of search results

We now have reduced the number of web pages to 268 000, which is a vast reduction. However, the search can be further refined using the advanced search option, as shown in Figure 10.12.



▲ **Figure 10.12** Using the advanced search option

The result is now only about 300 hits.

Evaluating information found online

AUTHOR

Can the writer or organisation be verified?

ACCURACY

Can claims be checked against other sources?

OBJECTIVITY

Is there bias, advertising or selective evidence?

DATE

When was the information updated?

COVERAGE

Are arguments supported and complete?

WEBSITE

Does the site appear genuine and do links work?

Internet protocols

HTTP

Rules for transferring web pages

HTTPS

HTTP over an encrypted, authenticated connection

FTP

Protocol for transferring files

SSL

Textbook term for secure transport; modern HTTPS uses TLS

Internet risks and regulation

KEY CONCEPTS

- Inappropriate and harmful content can be encountered online
- Control may help protect children and reduce illegal content
- Regulation may be costly and hard to enforce globally
- Freedom of speech, censorship and differing laws complicate control
- Use security precautions and evaluate sources carefully

Internet regulation • textbook debate

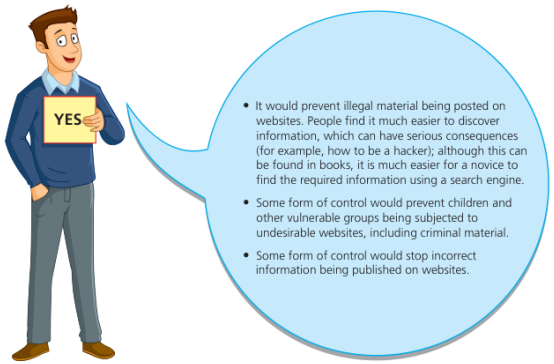
Arguments supporting regulation of harmful online material.

- Voice over Internet Protocol (VoIP) when carrying out video chatting and/or audio chatting over the internet
- used in instant messaging
- when making use of a social networking site.

10.2.7 Internet risks

Many of the risks associated with using the internet have been raised in this and earlier chapters. As long as users take all of the precautions covered in this book, they should find the internet a safe, enjoyable and very useful source of entertainment and material.

Unfortunately, the internet does contain inappropriate material, some of which is criminal in nature. Many users seem to think that because the internet is not policed, then they are unlikely to be prosecuted. This is of course untrue. To prevent inappropriate material finding its way on to the internet, should there be some form of control? Figures 10.13 and 10.14 detail some of the arguments.



▲ **Figure 10.13** Arguments in favour of internet control

Internet regulation • opposing view

Arguments about cost, enforcement and freedom of expression.



▲ **Figure 10.14** Arguments against internet controls

Exercise 10b

Looking at the arguments in favour (Figure 10.13) and against (Figure 10.14), what is your opinion?

Should we police the internet and tighten up the laws to prevent illegal use, and prevent the posting of offensive or harmful material?

Would increasing the monitoring of the internet prevent crime? Would it stop certain agencies hacking into government websites in other countries to try and alter the democratic processes in these countries?

Or do you believe this would stop the internet working properly and would it be an invasion of freedom of speech?

There are additional precautions that can be taken:

- ISP companies give the 'bill payers' some control over what can be accessed. It is possible for concerned parents, for instance, to put filters onto the central router. This can prevent unnamed devices from accessing the internet through their router, or prevent named devices from gaining access to certain websites.
- Similarly, mobile phone companies offer a similar service and can block access to certain websites. It is not fool-proof, but is an additional safety net.
- Schools and textbooks can also play their part by educating users about the correct use of the internet – what to look out for and what precautions to take. Teachers are an excellent source of information; if a student wishes to access a new website, it is always worth checking with the teacher first to see if it is safe to go online and access the website.

Exam practice 1 • Question

Explain two differences between the internet and WWW. [4]

Think → Explain → Give a relevant example

Exam practice 1 • Suggested answer

Internet is the global network infrastructure; WWW is a collection of web resources using it. Internet supports many services including email; WWW is accessed through browsers and URLs.

Exam practice 2 • Question

State two rules of netiquette. [2]

Think → Explain → Give a relevant example

Exam practice 2 • Suggested answer

Use respectful language; avoid ALL CAPS; check spelling; respect privacy. Any two valid rules.

Exam practice 3 • Question

Explain why Bcc is useful when emailing a large group. [3]

Think → Explain → Give a relevant example

Exam practice 3 • Suggested answer

Bcc hides recipients' addresses from other recipients, helping protect privacy and reducing exposure of the mailing list.

Exam practice 4 • Question

Describe two dangers of opening unknown email attachments. [4]

Think → Explain → Give a relevant example

Exam practice 4 • Suggested answer

Attachments may run malware that damages or steals data; malicious files or links can support phishing or unauthorised access.

Exam practice 5 • Question

Compare an intranet with an extranet. [4]

Think → Explain → Give a relevant example

Exam practice 5 • Suggested answer

Intranet is restricted to internal organisation users; extranet gives selected external partners controlled access to part of an organisation’s resources.

Exam practice 6 • Question

Give three characteristics of a wiki. [3]

Think → Explain → Give a relevant example

Exam practice 6 • Suggested answer

Multiple contributors can edit pages; edits can be made in a browser; a revision history is maintained.

Exam practice 7 • Question

Explain how to improve a search query. [3]

Think → Explain → Give a relevant example

Exam practice 7 • Suggested answer

Use more specific keywords, add relevant terms, and apply advanced search filters to reduce irrelevant results.

Exam practice 8 • Question

State four criteria for evaluating a website. [4]

Think → Explain → Give a relevant example

Exam practice 8 • Suggested answer

Check author, accuracy, objectivity, currency, completeness and website legitimacy. Any four.

Exam practice 9 • Question

Describe the purpose of HTTPS. [3]

Think → Explain → Give a relevant example

Exam practice 9 • Suggested answer

HTTPS secures communication between browser and web server through encryption and authentication, helping prevent interception or alteration.

Exam practice 10 • Question

Discuss one argument for and one against regulating internet content. [4]

Think → Explain → Give a relevant example

Exam practice 10 • Suggested answer

For: helps restrict illegal/harmful content. Against: difficult and expensive to enforce worldwide, with possible freedom-of-expression concerns.

Classroom activities

ACTIVITY A

Draft a professional email using To, Cc and Bcc correctly.

ACTIVITY B

Compare a blog, wiki and moderated forum.

ACTIVITY C

Find two online sources and evaluate credibility.

ACTIVITY D

Debate internet content regulation in two teams.

Chapter 10 • Final recap

KEY CONCEPTS

- Email use: legal constraints, acceptable language, security, netiquette
- Email features: groups, To/Cc/Bcc, forwarding, attachments and spam
- Internet, WWW, intranet, extranet and online communities
- ISP, browsers, URLs, search strategies and source evaluation
- HTTP, HTTPS, FTP, SSL and internet risks