

IN BRIEF

- Email is one of the most useful applications on the Internet.
- Email has many advantages over other conventional forms of communication.
- Email can be used for more than simply sending text messages.

Introduction to email

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Email is a computer based method of sending messages from one computer to another. From its humble beginnings 40 years, it has matured to become a crucial tool in utilising the power of the Internet. More people have access to email than to any other Internet application, and despite the problems with spam email and viruses, email remains popular because of its low cost, universality and ease of use. This section looks at the advantages of email over other methods of communication, how email works and other ways of communicating using the Internet.

THE INTERNET GUIDE FOR DENTISTRY

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WHAT IS EMAIL?

Email stands for 'electronic mail' and is the digital equivalent of writing and posting a letter to anyone who has access to the Internet. It is the most widely used service on the Internet, mainly because it is convenient, fast, cheap, informal and easy to use.

Initially emails were restricted to pure plain text, but now they may contain file attachments (for example a program or spreadsheet), use enhanced text formatting (to produce letters with coloured backgrounds, images and animation) and feature links to web pages. Indeed, the email system is still limited to only sending pure text characters; all the other enhancements (which are made up of binary data) are coded into text before being sent. When they are received, the email program seamlessly decodes the text characters back into their binary 1s and 0s. Figure 1 shows the popular email program, Microsoft Outlook Express (OE).

The advantages of email over the postal service

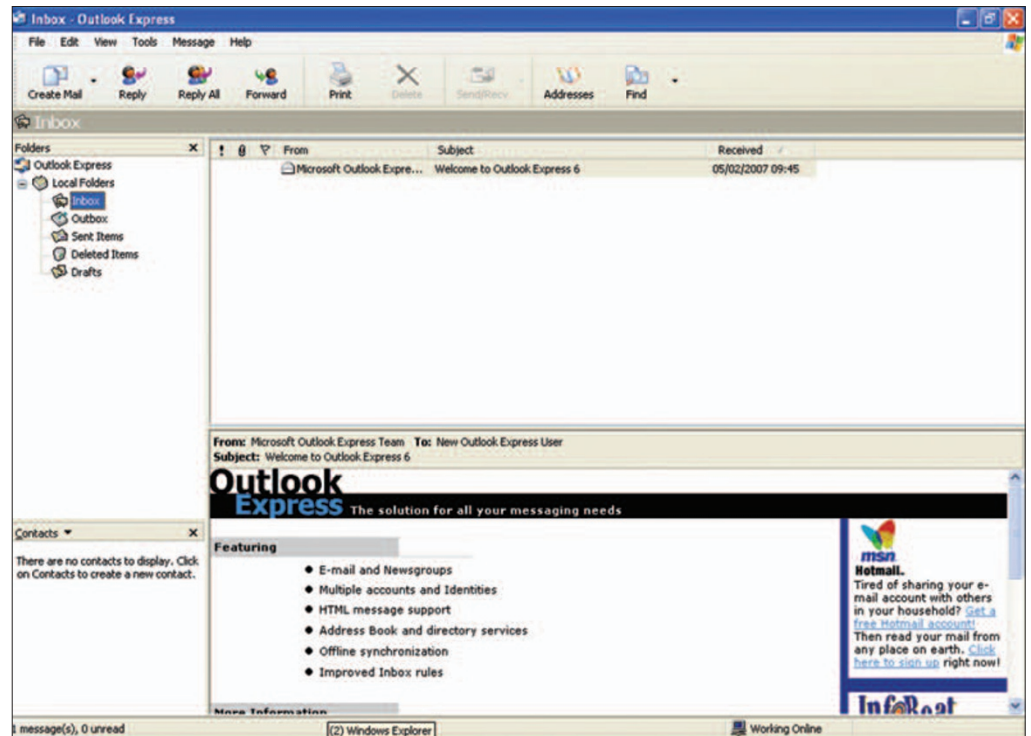
- Cheaper, especially for international communication. It costs the same to send an email to New York as it does to Notting Hill

- Faster, especially for overseas communication. Most emails will arrive at their destination within seconds or minutes
- Easier to communicate to multiple recipients, be it 20 or 2,000 people
- Quicker and less formal than writing a letter
- No expense of paper, stamps or envelopes
- No need to visit post box or post office
- Can send digital data as an attachment rather than on a floppy disk or CD-ROM
- Can send and receive emails 24 hours a day, 365 days a year
- Recipients can pick up their email messages from anywhere in the world provided they have access to the Internet
- Email is particularly useful for group discussions.

The advantages of email over a voice telephone call

- Cheaper, especially for international calls
- More convenient. Because email can be acted upon at any time, people can send, read and reply to messages at a time that causes minimal disruption to their normal working day
- You have a record of the communication

Fig. 1 Microsoft's Outlook Express is one of the most popular email programs (screen shot printed with permission from Microsoft Corporation)



- You can include a document, database or spreadsheet that the recipient can edit
- You can download your messages and send your replies at a time that is convenient for you
- It avoids the terrible problem of 'telephone tag' where you leave a message for someone to ring you back, and when they do, invariably you are in the middle of treating a patient!
- When communicating overseas, it is not necessary to take time zones into account.
- It can be harder to find someone's email address than his or her postal address or telephone number
- Unlike the telephone, you cannot have an instant two-way communication
- Spam can be just as irritating and time wasting as unsolicited post, faxes and telephone calls
- Email attachments can infect your computer with a virus and potentially damage your valuable dental database. (Protecting your computer against spam and viruses is dealt with in a later article).

The advantages of email over a fax message

- More private and secure
- Some faxes are very difficult to read because of the poor quality of their reproduction. Fax paper is difficult to store and deteriorates rapidly over time
- No paper jams, running out of paper or other fax errors
- Does not waste paper, yet with email you can print out any important messages if required
- Can send colour pictures
- Can attach a sound file to your message
- You can include a document, database or spreadsheet that the recipient can edit
- The fax machine needs to be turned on all of the time to receive a fax, whereas email is stored by your Internet service provider (ISP) for you to pick up at any time.

The disadvantages of email over other forms of communication

- Cannot send something physically by email
- Not everyone has an Internet connection
- People may only check their email once per day or less

The business world has recognised the many advantages of email over the older technologies of telephone and fax and has been quick to implement email as a major part of their communication strategy. It is therefore not surprising that in 2006, 97% of a sample of 1,000 businesses in the UK were using email.¹ Whether you are communicating with a patient, a friend or a company, it is the convenience factor that is probably the most beneficial feature of email.

HOW DOES EMAIL WORK?

An email program (such as OE) is used to send and receive email messages. If you use a 'dial-up' connection, you would normally compose a message on your email program before you connect to the Internet; by composing 'off-line' you avoid wasting money on unnecessary telephone charges. Once you have written your message or messages, they are stored in an 'out box', ready to be sent next time you go online.

When you decide to go online, most email programs are configured to automatically send the messages waiting in your 'out box' and receive any messages which have been sent to

you. As the incoming messages arrive, they are normally stored in an 'in box' for you to either read while you are still online or to read after you have disconnected from the Internet.

The way this system works is that all your incoming email is stored on a computer (called a mail server) by your ISP. Your computer does not need to be switched on all of the time; your incoming messages will wait on the mail server until you go online to collect them. In the same way, the email you send to other people first goes to your provider's mail server, which in turn sends it to your recipient's mail server. Here it is stored ready to be downloaded the next time they go online (Fig. 2). For a more detailed explanation of how email works, view the article on the HowStuffWorks website.²

For people with a permanent Internet connection, the email program can be configured to check for email at regular intervals.

Choosing an email program

Most people use OE as their primary email program as it is provided along with the Windows operating system. It has been chosen as the standard email application for use on the NHSNet. All email programs work along the same lines and most feature some form of virus detection and spam filtering, although the results are quite varied.

Some people prefer to use a different email program such as Eudora³ as it tends not to be targeted by hackers as much as Microsoft's products. Like many programs available on the Internet, there are a number of versions on offer:

- Eudora 'light' version is free but has fewer features
- Eudora 'sponsored' version is free, has more features but includes a small area for adverts
- Eudora 'pro' version, including person-to-person technical support and an anti-spam feature, costs around \$50.

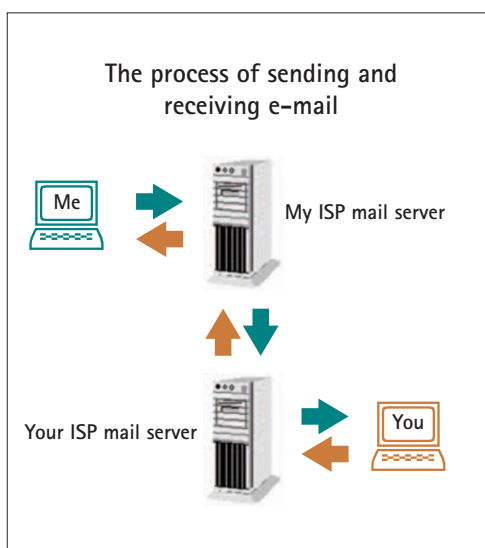


Fig. 2 The process of sending and receiving emails relies on computers called mail servers, which direct email to the correct Internet service provider

Most email accounts can also be accessed directly via a web browser, such as Microsoft Internet Explorer. This is handy if you are travelling away from home and want to send and receive emails. Visit the home web page of your ISP and look for an area where you can check your email; all that you normally require is your email address and password.

Many people supplement the email address provided by their ISP with a free web-based email account from sites such as Yahoo! Mail,⁴ Hotmail⁵ (which is owned by Microsoft) and Gmail⁶ (from Google). You do have to be online to write and read messages, which can be costly if you use a dial-up connection. Some people use web-based email whenever they subscribe to websites or buy items online; this can help to keep spam away from your main email address. Some services put a limit on the number and size of attachments that you can send. They make money from adverts placed on their websites and a few lines of advertising at the bottom of each email you send out. Some web-based email accounts are not really suitable as your main

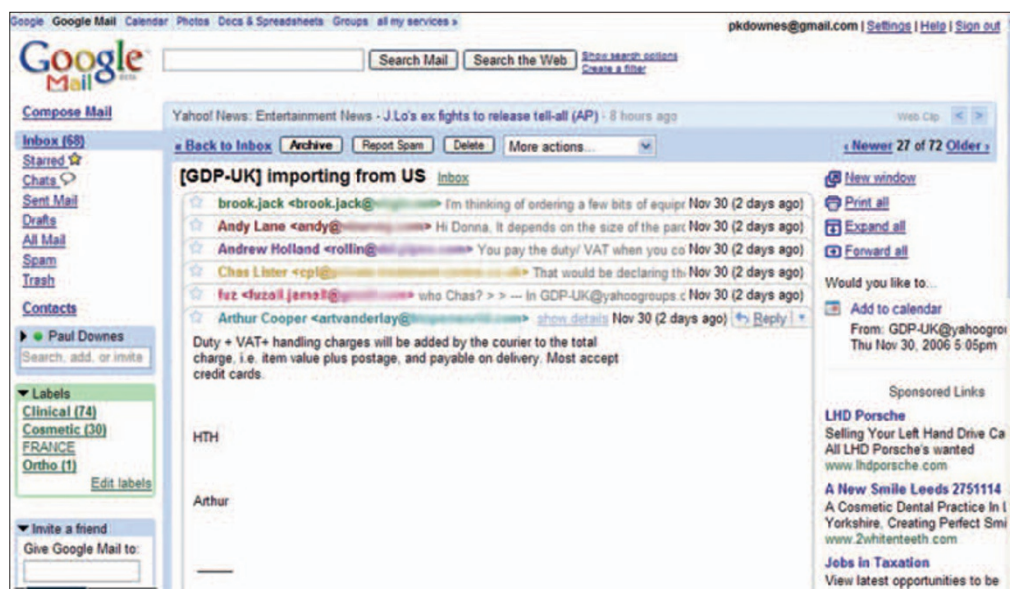


Fig. 3 Google's Gmail web-based email program automatically groups together related email messages into 'conversations', making the sequence of emails easier to read. In this case it is an email thread from the popular GDP-UK mailing list (Google™ screen capture © Google Inc., printed with permission)

Fig. 4 The Dentaltown website is host to a very active message board that enables thousands of dentists to communicate to each other worldwide



business email account as there is little kudos in receiving an email with a Hotmail or Yahoo address; these addresses have a reputation of attracting spam and of being used by hackers and spammers. Gmail has some interesting new features such as grouping related messages into a 'Conversation View'. Each message sent is grouped with all the responses received. In this view, all the messages are stacked on top of each other, like a deck of cards, making it easy to view all the messages in context (Fig. 3).

Email as an integral part of using the web

Once you spend time surfing the web, you soon notice how email has become an integral part of the browsing experience. Here are just some examples of how email is used by websites:

- To receive confirmation of online purchases
- To receive details of invoice and delivery
- To confirm usernames and passwords for subscribing to websites
- To send registration codes to activate software licenses
- To obtain help and support via a website
- To receive a weekly/monthly newsletter with an update about new services or special offers via a website.

MAILING LISTS

Mailing lists are free subject-specific discussion groups that are participated in and distributed by email. There are tens of thousands of mailing lists to subscribe to and they require no additional software other than your email program.

Mailing lists are set up and run on computers called mailing list servers and by programs that automate the management of the lists. Once a list is set up, virtually all operations are performed remotely by email. The most popular mailing list provider is the user-

friendly Yahoo! Groups;⁷ it can be accessed from their website as well as by email. Some lists have restricted membership (eg limited to the dental profession) and some are moderated (messages are read first before being sent out to members of the list). There is also the option of either receiving each message as an individual email or having them compiled as a single daily digest. The GDP-UK⁸ mailing list is the most popular dental mailing list in the UK.

The general steps for using a mailing list are:

1. Locate the list in which you want to participate
2. Follow the instructions and subscribe to the list
3. Read and write to the list
4. Remove yourself from the list (unsubscribe) when you are no longer interested in the list.

OTHER WAYS OF COMMUNICATING USING THE INTERNET

Usenet newsgroups

Newsgroups are similar to email mailing lists in that they provide a means of joining in with group discussions. Each newsgroup contains threads made up of messages (also referred to as 'articles' or 'postings') that look like email between one user and another, but can be read by anyone accessing that particular newsgroup. Each follow-up to an article is collected together to form a 'thread'; this makes the flow of the discussion easier to follow.

In February 2001, Google Groups⁹ took over the running of the Usenet newsgroup service and it now contains the entire archive of discussion groups dating back to 1981. The database now contains more than 845 million posts. Instead of needing a special newsgroup reader program, Google has made the whole system web-based so that it can

simply be accessed via their website using a web browser, such as Internet Explorer. Carrying out a search on the term 'dentistry' from the Google Groups website shows that the main dental newsgroup is sci.med.dentistry; nowadays it tends to be populated by postings from patients rather than dentists.

Web discussion groups

The British Dental Association¹⁰ has a forum area on its website for BDA members only and covers clinical as well as political topics. Although useful, it hasn't yet generated an active community. On the other hand, the Dentaltown¹¹ website has over 60,000 members worldwide and has a very active forum with about 900 posts per day (Fig. 4).

Instant messaging

Instant messaging (IM) allows you to maintain a list of people that you wish to communicate with. You can send messages to any of the people in your list, often called a buddy list or contact list, as long as that person is online. Sending a message opens up a small window where you and your friend can type in messages that both of you can see in real-time. It is also possible to create 'chat rooms' for groups of people to have simultaneous discussions. Most of the popular IM programs provide a variety of features such as sharing files, conversations using a live webcam and sending text messages to mobile phones. The most popular IM systems are AOL Instant Messenger,¹² Windows Live Messenger¹³ and Yahoo! Messenger.¹⁴ Instant messaging is not just for home use; many businesses rely on IM to provide a very cheap means of supporting collaborative work.

VoIP (voice over Internet protocol)

VoIP is the transmission of telephone calls over a digital network. Traditional analogue telephone networks use circuit switching which maintains a two-way connection for the entire duration of the call. This is inefficient, as most of the time only one person is talking and there are silent intervals when no data is being sent at all.

The Internet uses packet switching which is far more economical. This is because it only needs to maintain a one-way connection for long enough to send small packets of data that make up the spoken words. While either person is not talking, the bandwidth is still available for the flow of packets from other computers. Telephone networks and large companies have been using VoIP for a long time, but the technology is now readily available for home and small business users.¹⁵ It enables you to make international calls via the Internet at virtually no cost, provided the other person has the same software installed on their computer.

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3. Eudora email program. <http://www.eudora.com/>
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5. Hotmail. <http://uk.msn.com/>
6. Gmail. <http://mail.google.com/mail>
7. Yahoo! Groups. <http://groups.yahoo.com/>
8. GDP-UK mailing list. <http://health.groups.yahoo.com/group/GDP-UK/>
9. Google Groups. <http://groups.google.com/>
10. British Dental Association website. <http://www.bda.org/>
11. Dentaltown. <http://www.docere.com/Dentaltown/SiteDefault.aspx>
12. AOL Instant Messenger. <http://info.aol.co.uk/aim/>
13. Windows Live Messenger. <http://get.live.com/messenger/overview>
14. Yahoo! Messenger. <http://uk.messenger.yahoo.com/>
15. Skype VoIP software. <http://www.skype.com/>