Distributing mobile content to devices

In many ways, creating content is the easy bit. Learners can create mobile content for themselves in the form of text, audio clips, images and even spreadsheets. Tutors can create mobile-ready Microsoft® PowerPoint presentations or podcasts for learners, but unless the content can be distributed between tutors and learners much of the educational potential is lost. This section looks at the alternative ways mobile content can be distributed.

Benefits

- Encourages collaborative learning as learners can capture sounds, images or textual notes and then share them with peers and others involved in the learning process
- Develops decision making about how and when to share files with others and how to remain safe whilst doing so
- Provides a means to distribute electronic material direct to mobile devices rather than via a computer.

In order to distribute resources to mobile devices there is a need to understand the range of methods that can be used for distribution, including:

- Bluetooth®
- Memory media
- USB connection
- Downloading from a learning platform
- Email
- Web 2.0 tools
- QR codes

Bluetooth®
Bluetooth® is used by learners to distribute music, images and other files amongst themselves. Many learners will use this method use it because it is easy to use and free. Content could also be sent to the teacher's device (which might be a PC, laptop, PDA, phone or similar) using Bluetooth®. Distribution this way can be 'viral', i.e. quickly spread among students, but can also be fairly inefficient if a number of files are being sent to the same device at the same time.

A 'one-to-many' approach may be necessary if a teacher wishes to distribute content to learners via Bluetooth®. Bluetooth® broadcasting services are not free, therefore an investment would have to be made. This can be for as little as £75, however more expensive systems are also available.

A number of file types can be distributed in this way. However, the transmitter and the recipient must be within around 30 feet (9 -10 metres) of each other.

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Memory Media

Memory media has become a quick and convenient method of transferring files form one device to another. It can be an effective method of distributing materials and resources, as learners can download content to the media (stick or card) for use at a time and place that is convenient for them.

In recent years, the size and diversity of portable memory media has grown tremendously. The most commonly used cards can now be found with anything from 512MB of storage space right up to 16GB, before they become prohibitively expensive.

Memory cards are provided with and for all kinds of mobile devices. Mobile phones, digital cameras, PDAs and some games devices may all use some form of removable memory card. Memory cards are generally used to supplement the mobile device's own internal memory, and can easily be removed for more secure storage or uploading to a computer.

See http://en.wikipedia.org/wiki/Memory_card (unverified) and http://memorycards.notlong.com for an overview of the types of memory card available.

Teachers might find a memory card duplicator useful in order to prepare a large number of memory cards for a particular device. Duplicators or duplicating services will recognise a number of formats including SD Cards, MicroSD, Mini SD, MMC, and Compact flash. For Sony Playstation® Portable (PSP™) users however the memory stick is a Sony Duo® or Sony Pro Duo® memory card and a special adaptor to the duplicator should be used in order to duplicate files.

USB Memory sticks

USB memory sticks (sometimes known as pen drives) have become an indispensable tool in the lives of learners and teachers. The sticks are used to carry around all types of digital files, for all sorts of reasons. The capacity of modern memory sticks is huge, with volumes increasing all the time. The pen-drive has the potential to be a mobile device in its own right, with many software tools able to boot directly from them.

See www.techdis.ac.uk/getfreesoftware and http://portableapps.com for examples of this type of software.

Learning Platforms (Virtual Learning Environments)

Learning Platforms (which could include VLEs, shared folders, Intranets etc) are ideal for distributing content. Professor Derek Morrison of the University of Bath refers to online environments as *'filling stations'.* Learners can access the learning platform and 'fill' their memory card with files and learning resources relevant to the particular topic being studied, or receive an entire term's provision of learning materials. Resources can be provided in various formats, enabling the learner to select the version appropriate for his/her device.

The 3Ms article 'MUVE's, Moodle and Microblogging' talks about communities on the move – how learners might visit a learning platform purely to collect and 'fill up' on the resources needed at that point in time.

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http://emthreeproject.blogspot.com/2008/01/m3-muves-moodle-and-microblogging.html

E-mail
E-mail can be considered as a method to push content to users. The recipient has to download the resources attached to the e-mail initially onto a computer and then transfer them to the mobile device, or use synchronisation software, in order for the device to receive the files.

The tutor should consider which file formats would be appropriate for the learner's device. Information about the learner and his/her device is therefore needed prior to the delivery of learning.

Web 2.0
There is great potential for the use of Web 2.0 sites as a distribution tool for mobile and other devices. Many sites offer free storage and therefore could be used as a form of 'learning platform'.

E-Tribes and E-Snips are just two sites that work well as online storage sites. Free user accounts can be set up and files can be shared with others, either privately via an email invite or made public for all to view.

http://www.etribes.com
http://www.esnips.com
http://www.xdrive.com/
http://www.box.net/
http://www.mobango.com/

Some online storage sites have a particular focus, for example Flickr® is a well-known online photo management and sharing application.
http://www.flickr.com
http://www.photobox.co.uk

Sites like Flickr® can receive images via a mobile phone, both directly as MMS (Multimedia Messaging Service) messages and indirectly (see below) as high resolution images. Among others, the site http://www.picnik.com/ offers basic editing facilities.

http://www.shozu.com
Shozu® is an application that allows the user to perform a variety of tasks, including sending high resolution images to a variety of sites such as blogs, photo storage etc, and uploading videos directly to sites such as YouTube™. Some sites, such as the microblogging site Jaiku®, work well with Shozu® and can act as an organiser of content taken from the device. Shozu® can run on a range of mobile phones, but requires downloading and an initial set up. Twitter is another microblogging site that pushes and pulls short messages from mobile phones.

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QR Codes

A QR code is a 2 dimensional bar code that can contain data such as text, hyperlinks and images. A photograph of the code can be taken using the camera on a mobile phone, and reader software such as Kaywa (http://qrcode.kaywa.com/) allows the phone to recognise and 'read' the instruction.

Information can be distributed via a QR code on a poster, on an induction leaflet, on a Microsoft® PowerPoint presentation or on the learning platform area.

The QR code above contains the following website address:
http://www.mobile-learning.blog-city.com/are_qr_codes_semacode_the_future_for_mobile_learning.htm

Sample scenarios:

- Handouts and files can be sent using Bluetooth® from the tutor to an individual learner for specific support, or to a group of learners at the start of a class.
- Sending files using Bluetooth® is a novel way to send files from one device to another – a tutor can beam files to a learning group at the start of a class, or at the end in the form of homework
- The majority of mobile phones have Bluetooth® functionality, and sending questions or answers to a tutor's device is free.
- Quieter learners, or those less vocal in a large group, may feel more comfortable asking questions by beaming the message to a tutor or peer, or adding a short message to a microblogging area
- A lull in a group discussion could receive fresh impetus if learners receive a beamed prompt message, or a Twitter message to their mobile phone, at the appropriate time.
- A set of instructions could be beamed one step at a time for learners who would feel overwhelmed receiving all information at the same time. As a later activity, the learner could piece together all the instructions and send a collated set, in the right order, back to the tutor or to a peer.
- Data can be collected in the field and gathered collectively by sending all files to one device, such as the tutor laptop.
- Learners can collect text or visual information via a QR code placed on posters, handouts or presentations.

Converting resources

Sometimes files or recordings (audio, video or text) will not 'play' on other devices, often because the device has been configured by its manufacturer to save only in their proprietary file format. Therefore it may be necessary to convert files to a more universal file format before they can be used elsewhere.

Audio and Video Converters
There are a number of services and websites that provide free file conversion. However, it is advisable to check the site well before downloading the software for use. The following list provides examples of converters; some are free and some require a small fee before downloading.

http://www.nch.com.au/switch/index.html (Audio)
http://www.nchsoftware.com/prism/index.html (Video)
NCH software is a file format converter for Windows® or Mac®. It converts audio or video files from many different file formats into .mp3, .wav or .wma (audio) files. It performs similar conversions for video files.

http://www.allmusicconverter.com/
AllMusicConverter can convert all music and movie files that can be played on your PC.

http://www.avs4you.com/audio.aspx
http://www.avs4you.com/video.aspx
Convert various audio or video file types including .mp3, .wav, .wma, .pcm, .ogg, .aac, .amr and others. It can also convert between most known video files including avi, mpeg, dvd, wmv, 3gp, flv and more. Users can also add and modify tags.

http://www.erightsoft.com/SUPER.html - Super will convert any audio or video file format to any other that may be required.

IMToo provides a full video format conversion service, from any file type to any file type.
http://www.imtoo.com/3gp-video-converter.html

Text Convertors
Documents must be in the correct file format in order for it to be read as intended, on a mobile device. There are 3 versions:

- .txt file, suitable for the majority of devices
- .htm file, a web page format for devices that contain a browser.
- .pdb file, a file suitable for Palm® OS devices

It is possible to save a Microsoft® Word document as a .txt file (or even as a .htm file) by navigating to **File >Save As** and selecting the appropriate option, but be aware that saving in this format could result in the loss of formatting such as structural headings, font effects, tables and paragraph indents. Mobile devices lend themselves to simple text documents, not complex ones!

If your Word Processing software does not allow you to save in .txt file format then you can convert the original text (eg in .doc format) using a free document converter such as ZamZar™ (www.zamzar.com).

The Adobe® file format.pdf (Portable Document Format) is a versatile file format which can be read on many devices, as long as Adobe® Reader software is available on the mobile phone or PDA. Software such as PDF995 can be downloaded free of charge and provides an option in the Print menu to produce a pdf document.
http://www.pdf995.com/

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The easiest option may be to create a text file in .txt format as most devices will have no trouble reading this format.

(See 'Making text resources available for learners' section for more information and http://molenetprojects.org.uk/moletech/howto/).

So, don't forget…

- Any resource you create may have to be converted into several formats before distribution. Learners will need to see clearly which file will be appropriate for their device before downloading.
- Choose the method of distribution to suit your learners' requirements – or provide the resources in various places to offer a choice for collection.
- Check initially with your learners before 'pushing' content to their devices. A large number of files will take up memory capacity on their mobile phone or other mobile device.
- Consider providing memory cards previously loaded with a range of resources. A duplicator will help add content to a large number of memory cards.

Accessibility commentary

Benefits
Sharing files between tutor and learners can produce challenges for a number of learners with access needs, but there are several advantages. These include:

1) Files can be shared 'on the spot' – without the need to travel to, and access, a computer. An activity incorporating Bluetooth® beaming allows all learners to feel included.
2) Simple file-sharing using a memory card slotted into a peer's devices does not need a high level of technological literacy.

Barriers
A range of barriers may exist as file-sharing indicates a need for confidence using file management on the personal device. Learners would need an understanding of what protocols are required to set up Bluetooth® permissions or to receive emails onto their device. There might be several essential steps to remember – for example in order to carry out Bluetooth® beaming an element of on-screen reading is required to confirm and accept files being received or sent.

Barriers with file-sharing on mobile devices may include:

1) Perceptual difficulties - the difficulty in actually reading the instructional information on a small device. This may be related to font size, font colours or both. There may be difficulties in handling a very small memory card, identifying the card slot on the device and understanding how to manage files to and from the memory card.
2) Navigation difficulties - on some devices it can be difficult to navigate to specific files easily and identify whether you have a suitable reader to open the file.

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Advice

With mobile devices, general good practice becomes more significant. This includes:

- Making sure the file name clearly indicates the type of file format for downloading
- Careful conversion of files, such as videos and images, to compress to a suitable file size. It would not make sense to spend time duplicating 30 memory cards with only 1 video clip or 2 high-resolution images. Lengthy videos, those needing to be seen in detail, or high-resolution images should ideally be made available for viewing on a computer screen.
- Ensure learners understand the need to send appropriate files between each other's device. Some institutions add statements about mobile conduct onto students' contracts to avoid any unnecessary issues in class.

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