

The purpose of this document is to provide to students in the School of Education clear advice about technology.

It is organised into 6 sections:

1. Why technology is an important component of contemporary education
2. Advice on technology hardware
3. Advice on software
4. Accessing technology
5. Managing your technology use efficiently
6. Issues about technology

There is an appendix on design in digital worlds

1. Introduction Why technology is an important component of contemporary education

Education is increasingly using a range of computer-based digital technologies as tools for enabling student learning. Within the school there is an expectation that units are delivered through an active engagement with these technologies. Students are required to access LMS, the Murdoch University Learning Management System, for units online, Lectopia for lecture recordings. Many units have Internet access as a co-requisite for external students. Students are expected to present assignments that have been word-processed and, sometimes, are submitted through electronic means such as email or on CD or DVD. Further, some units provide opportunities for students to explore and use technology in creative ways such as making presentations or posters. Some units are making use of Interactive Whiteboards.

As a School of Education, we are committed to modelling practice in using technology that is found in many if not most schools where students are likely to work as teachers.

Therefore, it is important that students understand and apply the technical, educational and aesthetic uses of technology. To that end, the following advice about **minimum standards for technology** is provided for all students enrolling in School of Education units.

Attitudes and values

Technology is used as an umbrella term for computers. While it is important to acknowledge these more recent computer-based and digital technologies, it is also necessary to recognise that there are traditional technologies such as paper and pen. In this sense then, technologies for learning are all tools that support learning.

Most importantly for students is an open-minded, flexible attitude to emerging technology and a clear understanding of their own values and dispositions about technology in their own learning and their future careers in education. That does not mean an uncritical acceptance of all aspects of technology use in education. The future of technology is not predictable and teachers need to maintain currency of their technological knowledge, openness to change, new technology and the uses for technology. Teachers also need capacity to use technology to enhance their own learning and the learning of their students.

In an increasingly visually oriented world *visual literacy* through technology is significantly changing the way we learn and live. Therefore the capacity for enhanced design choices and better understanding of the principles of design in teaching and learning materials and experiences are an important part of the work of teacher.

Of increasing importance in education is the use of social networking and internet-based technologies (sometimes

called Web 2.0). Blogs, wikis, social bookmarking, FaceBook (and similar), GoogleDocs, Google Scholar, etc all provide significant learning opportunities. They also raise questions of protection of online identity, privacy, copyright and ethical behaviours.

Engaging with technology sometimes feels like entering an unfamiliar world of different concepts and jargon. Your attitudes and values to technology are important and you begin by engaging with the concepts of the digital world. You also need to engage with the technical language (you will notice that in this document wherever we use a technical term we explain it the first time). Of similar importance is moving beyond simply accepting the defaults (pre-selected options) built into your computer hardware and software. Take responsibility for your own digital future.

Internet/Email access

Access to email on a regular basis is essential. It is Murdoch University policy to use email as the primary form of contact with students. Not only do you need to have email but also to access it regularly before and during units and during your course. Similarly, if your unit is offered through LMS, the primary source of communication for announcements and other information will be electronic.

2. Advice on Hardware

Computer equipment is a rapidly changing field and the following advice is broad and general.

Students are advised to use, purchase or lease up-to-date equipment, with at least the following:

- CD-ROM reader and burner; if possible, DVD reader and burner is desirable (note: floppy disks are rarely used nowadays – and it is predicted that CDs will have a limited life)
- USB Thumb Drive or equivalent
- Access to Internet and Email systems; where possible, Broadband access is better particularly if you are using LMS and having to download large files

Access to computer technology is a co-requisite for external students studying some units.

Some units may require access to additional digital equipment such as digital/video cameras.

3. Advice on software

Copyright

One of the key issues to understand is that copyright and other intellectual property laws protect most commercially available software. By installing software you are agreeing to an end-user license that allows you to have, generally, one copy of the program running per license.

There is another form of software, commonly found on the web, known as Open Source software. This software works on a different license basis allowing for you to obtain the software for free, and have as many copies as you like. However, individuals rather than corporations often develop this Open Source software, and therefore support for it may not be as strong as with commercial software.

For Windows/Vista OS, <http://www.openoffice.org> offers free downloads of a suite of software programs for word processing, presentations, spreadsheets. In a similar vein, a Mac OS version, called NeoOffice, is available at <http://www.neooffice.org/neojava/en/index.php>

Operating systems

There are a number of Operating Systems (OS) for computers.

Suggested minimum OS: either, Windows XP, or Mac OS X or Linux. Note Windows Vista is not supported by Murdoch University IT Services.

While, sometimes, earlier versions of an OS will continue to work, much of the functionality necessary for contemporary use requires more up-to-date versions.

Whatever OS you use, it is important that your work is capable of being read across platforms. There is greater interoperability between OS than previously, but you still need to be aware of the differences and to work in ways that will ensure your assignments can be read on different systems. Familiarity with a range of operating systems is desirable as schools can use different systems.

Software applications

Word processing/presentation/ spreadsheet:

In line with common practice in most schools and businesses the components of Microsoft Office (Word, PowerPoint, Excel) is a useful suite of integrated software applications: including word processing (Word), presentation (PowerPoint), spreadsheet (Excel), etc.

There are versions of these software programs in major Operating Systems (Windows and Mac) and, providing care is taken, it is possible to move files from MS Office across operating platforms.

However, it is important to note that some more recent software programs have introduced different formats for documents. In Microsoft Office (2007 and 2008 for Mac), for example, the default for saving documents is .docx; .pptx; etc (where in the past these documents would be saved as .doc; .ppt; etc.). Similarly, when you use some versions of software programs (e.g. MSPowerPoint) they may not embed files and fonts. This means that when you save a copy to a disk and submit it, your presentation may not include the sound files and video files you were using. They will be left behind on your computer and not be included in your presentation (your computer, to save space, links to the files rather than embedding them). This is a relatively easy problem to solve but you do need to be aware of this issue when submitting work digitally.

Open source software applications

There are also a number of Open Source programs with similar functionality (see earlier notes on Open Source software). Being Open Source, you can download them for little or no cost and they operate in much the same way. However, care needs to be taken that these programs have capacity to be exported to compatible formats (.doc; rtf; .pdf see notes below on file extensions).

There are also a number of other proprietary brand software products (e.g. MS Publisher) which, while useful, need to be also used with care in a cross platform setting such as the School of Education; students need to ensure that they can save documents to cross platform formats (e.g. to .pdf).

Supporting cross platform technology use through Portable Digital Format (.pdf)

At this point it is useful to mention programs (such as Adobe Acrobat) which can produce documents in Portable Digital Format (.pdf) format. These .pdf documents capture the document – including fonts and images and layout – as you have designed it. If you don't use a .pdf format you may spend considerable time designing your page and then sending them to someone else who doesn't have the same

software as you and the document cannot be opened.

Similarly the person to whom you send your document may not have the fonts that you have and your document layout is changed by the use of default fonts. There are several ways that you can convert your documents to .pdf and many of the more recent programs have built into them the capacity to “print to pdf” which means that rather than sending your document to a printer that will produce a piece of paper, the document is able to be saved as a .pdf file. The advantage of .pdf format files is that they can be easily shared across platforms; they are sometimes smaller which makes them easier to send via email; and, they hold your information as you want it to be held. Some software programs do not have built into them the capacity to produce .pdf documents and need a third party software application. When you purchase your software you should check that it has capacity to produce .pdf versions.

Fonts

Depending on the Operating System that you use, your computer has in its hard drive memory a number of fonts. Most computers have a common shared set of fonts (this document, for example, is being written in a font called Times New Roman which is found on most Western script computers).

But sometimes, from choice or by default or by accident of what comes with your computer, different computers will have different sets of fonts. Again, you can spend time designing a document only to have it lose all this care when it is opened on someone else's computer. Some applications allow you to “embed” fonts; the use of a .pdf application enables the fonts and therefore designs that you use, to be maintained.

Web browser and Internet access

There are a number of web browsers available and most are compatible across OS platforms. Popular web browsers include Safari (<http://www.apple.com/safari/> compatible with Mac and PC OS) and Firefox (<http://www.mozilla.com/en-US/firefox/firefox.html>). Web pages on MurdochNet have been prepared with the expectation that most users are using a recent version of a Web browser. Further advice on web browsers can be found at:

http://www.murdoch.edu.au/index/help/web_browsers#webctbrowsers .

You will need both an up-to-date browser and access to the Internet (dial up or Broadband though, depending on the nature of the downloads, Broadband is preferable).

Email software

Access to email on a regular basis is. Depending on your software you can use a dedicated email program (such as MSOutlook) or you can access email via a web-based browser. Whichever method, you need to ensure you have regular and consistent access to your Murdoch University email.

When you enroll you are required to provide an email address. your default email address is yourstudentnumber@student.murdoch.edu.au. You should be familiar with and use your Murdoch university student email address. Many students have personal email addresses (often with popular internet accounts such as Hotmail). Sometimes email from the University to these addresses may not be successful. The responsibility for your email rests with you.

A similar issue has to do with the naming conventions used for these email addresses. While there may be personal

significance of having an address cutebunny3@hotmail.com it is unprofessional and unhelpful for communication.

Other software

There is a wide range of other software applications available. In particular, students should be aware of the entry-level applications that are bundled with modern computers. For example, recent Apple Macintosh computers come with the iLife bundle of programs that include iPhoto, iMovie, GarageBand, etc.; similar equivalent applications are bundled with PC computers. These entry-level programs are adding to the standard for equipment available and therefore should be considered as part of the decisions about which computer to purchase or lease and should inform the choices about how technology is used.

4. Accessing technology

Accessing university based equipment

If students do not have access to their own equipment, there are available computers in technology labs on all campuses. Students should check out these options.

Accessing community-based equipment (such as that found in tele-centres and libraries) is another option.

5. Managing your technology use efficiently

File name conventions

You should adopt a file naming convention that is unambiguous and helpful. Generic file names such as *my assignment* or *project* are unhelpful. As a minimum, it is suggested that you use the following file naming convention:

Yourname(orstudentnumber)/ UnitName/ Date/ BriefTitle
(e.g. AStudentEDU100May12009Assignment1a)

File extensions (e.g. .doc, .pdf, etc. that are used by software programs to identify particular sorts of files) should be used, particularly when moving across platforms from OS to OS. Using the example given above, a file name for a .pdf version of the assignment would be AStudentEDU100May12007Assignment1a.pdf.

Some computer software programs will suppress the use of file extensions, in other words avoid showing them in the file name. You should always use file extensions because it assists others looking at your work to understand the software you have used and, if necessary, how to read your file.

Backing up information

As part of your competency with technology you need to have and to implement strategies for backing up information. While computers crash and data is lost it is important that you recognise your responsibility for ensuring that this does not impact on your completion of assignments and other work through having in place systems of support and backing up your work. Failure to back up information should not be proposed as a reason for incomplete or late assignments.

6. Issues

Financial: The School of Education recognises that some students may have limited means and that technology places added financial burden on them. Students should check forms of financial and other support available to them.

Responsibility as contemporary students: Students should also recognise that, while there are some choices about specifics of technology, it is no longer reasonable to avoid or reject its use in their own learning or in their teaching careers.

Appendix

Principles of design for technological and digital communication

When technology is used in education and learning there should be a focus on communication. The principles of design outlined below, enhance legibility and/or audibility and the processes of meaning making and therefore clarity of communication.

Each communication - a page of text, a screen of information, a film shot - is a frame. It is not a haphazard collection of information but a space that is capable of being shaped for the reader/viewer. The placement of information in the frame represents a choice for the communicator. The colour of the background, the amount of unused space (called "white space"), the choice of font, the size of letters, their placement in the space all represent choices made by the communicator. Many software programs have default settings but as a communicator you have choice over all these elements.

Some key principles of design important to communicating digitally include:

Contrast

Does text stand out from background sufficiently for easy reading? In audio and video work is the main message clearly heard against the background sounds or music? Is there a successful mix of words (text) and images?

Unity

Does the whole page or screen fit together. Do the fonts used complement each other? Are the fonts from complementary font families?

Balance

Does the design use symmetry or asymmetry effectively? Is there a balance between white space and information? Is there too much information included (in font sizes too small and too much information)

Emphasis

Is the reader/viewer's eye (or ear) drawn to the most important information? Is text emphasis (**bold text like this** or *italics like this*) used effectively? Is colour used effectively?

When we read information digitally, we are not necessarily using the same processes or techniques that we use when we read printed words and pictures on the page.

Remember: *A computer is not a typewriter.* It is capable of so much more.

Use by Date: This advice is valid until the end of 2010 or earlier if necessary. The fluid nature of technology requires regular updating of this information.