

Averting IT disasters

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Pātai (Question):

What do I need to know about Information Technology to avoid preventable disasters in my doctoral, or other, research?

Answer:

Today, competence with Information Technologies (IT) is an essential part of any researcher's toolkit. This issue was discussed in January 2009 by a group of Māori doctoral students attending the Ngā Pae o te Māramatanga Doctoral Writing Retreat at Hopuhopu. In one of the almost daily 'Hot Topics' sessions; 'Some IT disasters I narrowly averted', we shared our experiences and ideas about using IT. With most of us on limited incomes impacting on our whānau for the duration of our doctoral studies, low cost IT tips are offered. Because we are Māori the humour of our discussions is reflected here with no offense intended.

1. Marry an IT expert or have close relationships with 'the IT guys'

Pursuing doctoral research meant we used computers, laptops and other technologies outside of our formal university environments. For those of us with little IT knowledge, it was most helpful to establish a relationship with the people who can help us with IT, like "the IT guy just across the hall who handles the networks for the whole school".

Few of us as doctoral candidates had met or knew the IT experts in the universities where we were enrolled. Everyone in our Hot Topics session had met their workplace IT expert kanohi-ki-te-kanohi (face-to-face). At the very least we knew their names; some had shared 'a cup of tea' or regular chats and some shared freshly harvested kai moana with the expert, in appreciation of their help. One of our group had taught IT and is an expert in her own right and another was married to her favourite IT expert.

Hot IT tip: If you are lucky you can find IT expertise in your own whānau, and if not then by word of mouth. If you have to, pay for a private consultant or 'Dial-a-Geek'.

2. Back up your work

By this we meant save your work as you go each day. You can set up your computer to auto back-up for you. If you are unsure how to, seek help from your IT expert. We recommend you at least back up your work twice a day by saving copies of your files, for example as you stop for a lunch break, and as you are logging off or closing down your computer as you finish for the day (or night!).

Hot IT Tip: A word of caution, don't always rely on the institution's computer back up system, things can go wrong even there.

3. Back up your back up

Did you hear about the researcher who had 5 months' work for a research contract disappear when her laptop was stolen from the back of her car? The disaster was there were no electronic backup copies of her files in other locations. So we recommend you keep a copy of your files off the computer. Burn them onto a CD or DVD, store them on a flash drive, on an external hard-drive, or at the very least print it out. Over time we had also learnt that when you absolutely have to, it is faster to replicate a completely lost piece of work or file than it was to write it in the first place.

Hot IT Tip: A hard copy or print copy of your work will serve as a back up of digital versions of files during your research process.

4. Emailing for data storage

Free email accounts have storage. One doctoral student had her computer back-up automatically and sent out to her accounts at gmail.com (google mail). These accounts give you 4 gigabytes of storage free. Another freemail storage is at hotmail.com. Or send yourself an email with your files attached and move those files into folders online.

Hot IT Tip: Your work and files sent electronically to your supervisors can be other back up copies. Communicate with them about keeping an electronic folder of your work

5. Buy the biggest external hard drive you can afford

Working to a budget means a bit of research before you purchase external back-up hardware. It is recommended that you buy the biggest external hard drive you can afford. One of our group went into a computer shop after the retreat to buy a 100 gigabyte external hard drive to be told "they don't make them that small any more." They are big enough to hold your entire thesis and, if you haven't already done so, we recommend you copy all of your files across to an external hard drive as soon as you can. One of our 'IT guys' later suggested we change the emphasis away from the biggest to the best external hard drive. Before purchasing hardware, look for a reliable or favoured brand or model that has a good track record.

Hot IT tip: More expensive may not be best. A terabyte external drive is more than enough for all of your thesis, if not all of the data you can create in your entire life.

6. Digital filing conventions

Information you collate and create for doctoral studies needs a strong filing system that allows you to access data easily over extended periods of time. Change the name of your file each time you save it. You can add numbers as a suffix, or (optimistically) a lower case alphabet (we thought this meant a maximum of 26 versions until someone mentioned doubles, aa, ab etc!). One of our group kept only current working versions of files on her computer. Others included the date in the name of every file saved, and one had kept a record of each file name and its location in hard copy diaries over 5 years, see Tip 3.

Some of the group at Hopuhopu worked in teams that collaborated on documents. One team used a numeric versioning system with the original document numbered 0.1, and the edited version

numbered 1.0, then 1.1, 1.2 etc. When this is sent out and worked on by someone else in the team, the version becomes 2.1, 2.2, etc.

Hot IT Tip: Keep an external copy of each version of your work.

7. Destroying your hard drive 101

Did you hear about the Māori doctoral student who crashed a laptop hard drive by moving it without first switching it off? That was me. Avoiding the cost of a data retrieval service and reconciled to the loss of one series of images taken during my fieldwork, at least (refer tip 3) all of the other data files on that laptop were externally backed up. My IT experts replaced the hard-drive and other IT savvy friends reloaded software.

At Hopuhopu one of the IT literate group members explained that in a laptop the hard drive moves. When your laptop is switched on treat it like a vinyl record player with a stylus, you wouldn't suddenly tilt that or turn it upside down. When you shut or close down a laptop make sure that the light goes out before you move it, otherwise you can crash the hard drive. Some more recent (expensive) laptops have solid state hard drives no moving parts. If you are not sure about your laptop refer to tip 1. We later learnt that most desktop PCs also have moving parts in their hard drives, with spinning discs.

Hot IT tip: Don't move your laptop or your PC while they are switched on.

8. Hardware that helps

The teaser to tempt the doctoral candidates out of their rooms at Hopuhopu to attend the Hot Topic session, invited them to bring their own most helpful hardware tip. As well as a large capacity external hard drive, the freedom of wireless keyboards and mice which have, literally, no wires can be helpful (NB., keep spare batteries available, and rechargeable batteries cost less over 3 years). It does help to have a back-up of a USB-plug keyboard and mouse for those times when even changing the batteries won't get a response from your computer.

Those of us of the 'digital immigrant' generation might be more used to pen and paper. For the 21st century, try a tablet and pen that can be used in place of a mouse. As with a mouse, it takes a few hours to get used to it, then becomes automatic. It is useful to have a mouse available as a back up.

Hot IT tip: Flash drives are readily transportable and two of our group were using 8 gigabyte flash drives. (Do they make them that small any more?).

9. Archiving

We discussed the options available for archiving information and agreed that paper is still the most stable and reliable medium for important documents (like our doctoral theses). It was suggested that CDs only have a 10-year shelf life and the average lifespan of a DVD was unknown. We wondered what new information technologies have been created that are more durable than paper?

Hot IT tip: Paper is one of the earliest information technologies and one of the most enduring mediums.

10. Wonderful ways with Microsoft Word

Microsoft Word is the world's most pervasive word processing program and we wondered if it was really set up for doctoral theses. All of our group were using MS Word and shared the following most helpful tips.

One of our group created her thesis as one document for the first time. The entire capacity of the computer was taken up and the document froze. This was solved by 'copying the document into a new document with Ctrl A, Ctrl C, Ctrl V or Command A etc for Macs.' Also a larger computer memory capacity helps (refer to tip 5).

For those using Macs or Linux operating systems, save or export files as a PDF for each chapter with the page numbers running sequentially. This will be useful when you print your full thesis.

Beware using software that is incompatible with the updated versions of MS Word, for example old versions of Endnote. One student had written her research proposal using Endnote for referencing. Updating her MS Word program corrupted the referencing so she lost it all, but (refer to hot tip 3) re-wrote it within deadline.

Always use a file name as a footer to your draft documents so that when you print a hard copy you will have the location of the source file. From the top menu bar use View/Header and Footer/Insert Auto Text/Filename and path. You will thank yourself when you need to retrieve a document three years after you first wrote it.

Use track changes (View/Toolbars/Track Changes) in the exchange of electronic versions of your drafts with your supervisors. Comments from supervisors can be displayed in different colours.

To edit and read through especially big documents use the document map that appears on the left (View/Document Map). Save time by formatting or setting up headings in your text as you write it.

11. More PhD and Hot IT Tips

Always print out to edit.

If your computer slows down try a 'defrag'. If you don't know how, seek advice from your IT expert or learn how, it is easy to do as often as you need.

Some USB plug-in hard drives can work on your PC or desktop computer but not work on a laptop, because they require an external power supply. Plugging your USB hard drives through a powered hub solves that issue.

Beware of viruses. The main source is from downloads off the web and email. Keep your virus protection software up to date. McAfee is provided free to Telecom/Xtra customers in New Zealand. The Norton anti-virus suite is expensive, comprehensive and helpful because it can recover files. Alternatively, you can download AVG at no cost if you decline all of the bells and whistles, but remember to check for updates and run scans of your computer regularly.

Invest in a fantastic ergonomic chair, you will spend unimaginably many many hours sitting on it.

Have confidence to use the computer, it is your tool.

Hottest IT tip: Listen to yourself when things go wrong. Don't be scared, don't panic. Stop, breath, and then think what to do. For a Māori way forward, refer to tip 1.

Author Notes

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