ETS 79 Fifteen changes across 25 years.pdf
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25 Years & 15 Digital Changes to Teachers’ Work Education Technology Solutions

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Today I am writing this article on my laptop on a free university inter-campus shuttle bus. Every so often, I date-check using Safari on my iPhone, which is connected to the bus’s Wi-Fi. My Fitbit just vibrated and sent me a text message reminding me that I have not achieved 250 steps this hour.

Twenty-five years ago, I was a tutor in Canada, while completing my Master’s degree. Teaching was face-to-face and I took pride in my collections of overhead transparency teaching presentations. One of our professors encouraged us to try email in the computer lab, saying that this new technology would be game-changing. We could not figure out why or how.

Here are 25 digital changes that have radically transformed the way in which I do my work as a university academic. Most of these changes will also resonate with school teachers. I have also included predictions as to what some of these these functions and technologies might look like in another 25 years.

Digital Changes 1-4: Devices, Location, Software, Storage

Mostly, I wrote using pen and paper. I sometimes used shared computers in the university library and computer labs, but was fearful that the computer would ‘eat my words’ which it sometimes did. I took a WordPerfect workshop and had a cardboard cut-out to place over the function keys to remind me what to press for tabs, bold and other format changes (there was no mouse). I stored my files on a floppy disk and later on a compact disc.

Now I usually carry four devices – a work and a personal iPhone, a laptop which I dock in my multiple campus offices and an iPad. I prefer writing on my docked laptop, accessing two monitors – one with my emerging document and the other going between email and Google for background research. I save my documents to the cloud so that I can access them from whatever device using Dropbox. I also save on my
work network and a terra-byte pocket hard drive as back-up.

In another 25 years, I predict that I will wear one small multi-purpose device (no larger than my current Fitbit). There will be no need to haul keyboards, tablets or mice. When I am in a place where I will not disturb others, I will dictate and my device will accurately transcribe to the cloud. When I prefer, I can project an instant keyboard or touch-tablet on whatever surface I choose, such as the bus window or the seat in front of me.

**Digital Changes 5-6: Printers and Social Media**

Printer paper came in big boxes of accordion-design interconnected sheets with printer guide holes along tear-off edges. I had to be careful not to tear the pages when separating them and the edges left a lint-trail upon removal. The outcome was legible but not professional.

Now I have a laser printer at home and professional-quality laser printers at work. It is easy to make my documents highly aesthetic with clear images and full colour. I try to remember to print only when necessary to stop destroying so many trees.

In the future, I predict that printing will be less necessary. Specifically, we will be easily able to ‘beam’ documents to one another. Documents will be readily projected onto surfaces in our immediate environment such as table tops and the backs of chairs.

Yesterday, I delivered a keynote presentation at a learning and teaching celebration. Rather than printing and handing out slide notes to the audience, I directed them to a website where they could download the slideshow. Immediately after the presentation, I joined a multimedia designer in an audio studio, where I redelivered the keynote. He produced two versions – a show in a subscribable podcast series and a screencast (audio-enhanced slideshow). Once these artefacts are posted to the web, I will tweet and LinkedIn post them. I will also receive newsfeed messages, I also receive newsfeed posts to Twitter and LinkedIn.!

**Digital Changes 7-9: Office Hours, Phones and Incoming Messages**

In 1992, my office phone rang frequently and missed calls went to voicemail or were diverted to a colleague’s phone. I spent hours of my day responding to messages. Office hours for the students I was tutoring were quite busy. Colleagues popped by my office for chats.

Now my office line seldom rings and when it does, I can see the caller on a small monitor built into my phone. I receive more calls on my mobile and hundreds of emails a day. I also receive texts and I receive messages from colleagues via Facebook personal messages, WhatsApp, and LinkedIn messages. I go between leaving notifications on my phone, getting annoyed by the frequency of them, turning them off and forgetting to check all of these various sources. Besides personal messages, I also receive newsfeed posts to Twitter and LinkedIn.

**Digital Changes 10-12: Distance Education, Global Communications and Feedback**

Twenty-five years ago, I was teaching in Canada. Similar to Australia, there are numerous regional and remote students who live too far from urban centres to regularly travel to learn on campus. A team of three academics (including me) travelled four times per semester to teach intensives. Students would mail assignments to us between sessions and we would return them with hand-written feedback at the next meet-up. Work with international colleagues was limited. Academics who were awarded Fulbright and other such fellowships, travelled internationally and initiated research/writing partnerships which sometimes endured.

Now, we have many tools and digital resources to bridge the distance. There are more external students than ever. International students enrol from every continent and many, many countries. Knowledge resources, communication and interactivity are primarily managed online, blended with some face-to-face intensives and/or situated work experiences. In most cases, flights are now inexpensive enough that the students can travel to the campus for intensives. Many governments offer scholarships to expedite the learning experiences of their students. Employer partnerships also mean that work-integrated learning sometimes occurs within industries.

Every university uses some type of learning management system (LMS). Some are moving to portals, where the students can actively contribute and have greater control over the learning resources and tools. Students download readings, organise their time using specialised calendars, access technology-enhanced learning resources such as gamified curriculum, 3D animations, videos and podcasts. Students use the LMS to see what assessment is due when, access exemplars and expectations.
submit their assessment items through the LMS, track their grades and receive feedback from academics. Almost all LMS sites use communication tools such as synchronous video-chats, text-based discussion forums and small group break-out rooms.

A few months ago, I did a lecture-tour in India where I visited a number of universities and schools. I now have many new LinkedIn contacts, who I communicate with on a regular basis. An Indian university colleague and I just wrote a book chapter together. We used an online survey tool to collect and then compare data between university students and graduates in India and Australia. While touring, I was interviewed by a journalist from Times India. Today, a LinkedIn colleague saw the resulting article in the newspaper and personal messaged me a photo of the page, taken on her iPhone. I just emailed the journalist and she immediately sent me back a PDF of the article. Tomorrow, I will tweet it and LinkedIn post it to continue the conversation.

**Digital Changes 13-15: Library Catalogues, Digital Repositories and Google**

Often for teaching resources and even more frequently for research purposes, I would spend hours and hours at the library, coming away with a small stack of journal papers and/or microfiche print-outs. To find a journal paper, I looked up keywords and/or authors’ names in big, thick, heavy printed manuals. I would write down a large stack of call numbers and then use a legend to find out which floors and rows of the library to search. Many times, the issue of the journal I was looking for was not on the shelf.

Microfiche had similar search technologies, but did not require physical library searching. I would ask for the microfiche call-numbers from a librarian and then sit at a magnifying machine that looked like a modern lecturn document scanner. I had to move the document left to right and up and down to read the full text.

Now, it is second nature to use digital journal indexes. Keyword searches reveal thousands of journal papers. I read the abstracts to make sure that the research is precisely what I am looking for before reading the full article. I have not yet come across any piece of information that is not on Google, and most topics have multiple websites dedicated to just that topic. The challenge today is how to moderate and discriminate between scholarly, robust research and false news. Overabundance of information is a problem that we have just begun to consider for ourselves and our students.

**The more things change…**

In this article, I described fifteen large-scale changes that have radically changed my experiences as a university academic. Other academics and teachers will no doubt think of many more changes. There are many notable comments from previous generations stating that technology cannot possible advance any further; it has met its threshold, reached its ceiling. I am not so naive. If technology has so radically changed my experience within my working lifespan, then it will no doubt continue to advance in ways that I cannot even imagine.

Access to digital tools and resources has not only changed my experience, but also my output and expectations. I have many more publications than I thought I would at this point. Each has far more references and other data than they did previously. While tracking citations was not possible in the past, I have no doubt that my publications have been read and cited much more than had they been published twenty-five years ago. They are so much more easily accessed today.

Do students have a higher quality learning experience than they did in the past? We certainly have more metrics and capacity for league tables to chart evidence of quality learning and teaching. However, talking to my parents, I wonder whether the university learning experience has altered that much. Their memories of the social aspects, exam stress, career aspirations, good and bad teachers and many more factors sound very similar to what I experienced as an undergraduate and to what my own son and daughter are now experiencing. In conclusion, as a teacher/academic, my own experience feels radically different, but is the essence of the university experience such that digital changes do not alter what it means to be a student?

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