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DIGITAL DEXTERITY: A SUSTAINABLE MODEL FOR BUILDING ESSENTIAL SKILLS FOR THE FUTURE WORKFORCE

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Abstract

The importance of digital dexterity in achieving institutional and business missions led the Council of Australian University Librarians (CAUL) to establish a Digital Dexterity Program in 2018. The aim of the CAUL Program was to ascertain the current state of play of digital literacies at member institutions and to establish best practice principles for developing the skills and understandings necessary for staff and students to become effective global citizens and lifelong learners. The Program consisted of three project teams tasked with developing resources that would provide:
- a framework for the development of digital dexterity skills,
- tools to assist CAUL members to improve their capability in digital dexterity, and
- a strategy and means to engage with stakeholders and advocate on digital dexterity.

CAUL's approach with the Digital Dexterity Program is unique in that it was practitioner-led, and involved industry engagement, particularly around the sustainability of the model. Each team consisted of CAUL member library staff with a passion for enabling and empowering staff and students through the development of digital dexterity skills. Team members were drawn from 14 institutions across six Australian states and territories and this collaborative work has enabled the development of a truly national approach. The grass-roots engagement included consultation with industry stakeholders outside of CAUL, including the Australian Academic and Research Network (AARNet), CAVAL and the Australian Research Data Commons. The Digital Dexterity Program, (launched in February 2019) included a Digital Dexterity Framework, and the establishment of a Community of Practice, which will ensure the continued development and sustainability of the program.

Keywords

Digital dexterity, digital literacy, employability, community of practice, CAUL

Introduction

The world of work and leisure is changing dramatically. Consider how we conduct our travel, banking, shopping and other activities today, compared to ten or twenty years ago. Someone born thirty years ago was born into a world of cassette tapes, cash and landlines, and a world without home internet access, wifi, smartphones, or apps. Automation, digital delivery, collaboration tools and many other technologies are touching our lives and disrupting our workforce at what seems an increasingly rapid pace. Today there are apps for everything, devices track our every movement (and, it seems, thought), and social media is pervasive. The way we work in libraries today looks quite different from ten years ago and this is clearly reflected in other industries and across other professions. Many tasks are automated or outsourced, and services that were once delivered in person are now delivered in our "tier zero" service layer in which our clients help themselves.

There have been numerous studies addressing the future of work and the top technology trends expected to have an impact on work practices. These include artificial intelligence, intelligent apps and analytics, the Internet of Things, cloud solutions, immersive experience, and blockchain technology, amongst others. The adoption of such technologies will mean a change in work practices. The digital economy will demand new ideas, information and business models, and technology will blur traditional business and national boundaries. The future workplace is envisioned as an environment where:
- fluency in communication, teamwork and collaboration skills will be essential for employability and business success;
- employees will need to apply creativity, critical thinking and constant upskilling to solve complex problems; and
- the increasing use of smart machines will mean that workers will need "extreme digital dexterity" (Gartner, 2017) to make the most of software and devices, and to take their personal workplaces with them.

Why is digital dexterity important?
A recent analysis by the National Centre for Vocational Education Research (NCVER) of internet job postings for 2014-2017 revealed that the top 10 most requested employability skills included the so-called "soft skills" of communication, organisational skills, teamwork/collaboration, problem-solving and time management (NCVER, 2018). Additionally, several Australian industry bodies (Australian Industry Group, 2018; Hajkowicz et al, 2016) have identified digital dexterity as crucial to the success of the future workforce and that higher education has an important role to play in ensuring Australians remain competitive in the labour market.

In 2018, ten Australian and two New Zealand institutions participated in the Jisc Higher Education Student Digital Experience Tracker survey (now called Jisc Digital Insights). This revealed that almost 75% of the 18,903 students who responded agreed that digital skills are important in their chosen career. However, only 44.5% agreed that their course prepares them for the digital workplace (Beetham et. al., 2019). This is clearly a gap that needs to be addressed by higher education institutions.

CAUL recognised the need for a shared understanding of the role of libraries in helping bring students, staff and employers closer together to build digital capability in higher education institutions at a national level. At the CAUL Meeting of September 2017, members determined that CAUL would adopt the Gartner definition of digital dexterity, i.e. that it is a critical component of "successful adoption and use of media, information and technology to bring about digital business success." (Gartner, 2015, p.1)

Across the literature, the terms 'digital literacy' and 'digital dexterity' are often used interchangeably, but Gartner's definition of digital dexterity encompasses the "cognitive ability and social practice needed to leverage and employ various types of media, information and technology for advantage in unique and highly innovative ways that optimise personal and business value" (Gartner, 2015, p.3). Digitally dextrous organisations have the ability and desire to exploit existing and emerging technologies for better business outcomes. More recently, Gartner (2018) has refined the definition

to emphasise that digital dexterity is a *learned ability* that leads to fluency in collaboration, adaptability, analytical thinking and creativity.

The CAUL Digital Dexterity Program that grew out of the September 2017 meeting was truly national, consisting of three project teams, with 17 members drawn from 14 separate institutions across Australia. The teams worked for most of 2018 to achieve two key outcomes:
1. a national position on digital dexterity, and
2. a sustainable model for building capability amongst member staff.

These key outcomes addressed the Program objectives:
● to make universities aware of the importance of digital dexterity in accomplishing their missions and to engage with CAUL around this;
● to ensure that Australian graduates are given opportunities during their studies to develop the digital skills that will enable them to thrive in a global work context and become effective global citizens.

A national position on digital dexterity

The first outcome of the CAUL Digital Dexterity Program was a policy position on digital dexterity, with an accompanying framework. This establishes our shared understanding, defines what is meant by digital dexterity and provides a starting point for stakeholder engagement and the development of skills and capability among our library workforce, and across our institutions if appropriate.

The framework was informed by a literature review, existing exemplars and feedback from CAUL members along the way. The team drew heavily on Gartner's definition of digital dexterity and on the Jisc model to create the framework. The framework is a tool that CAUL members can use, adapt and refer to as they explore digital dexterity at their institutions. Importantly, this is a model, not a prescription. CAUL members agree that the formal adoption of an explicit framework at an institution is not a prerequisite for organisational digital dexterity. The CAUL framework acts as a tool and a prompt.

A key element in envisioning how a future "digitally dexterous" organisation might look is to assess and understand the context in which the sector is currently operating in relation to digital dexterity and identify any skill gaps that currently exist. The Digital Dexterity Framework project team conducted a survey of CAUL institutions in May 2018 to determine the current state of play regarding digital dexterity. Thirty responses were received and are summarised in Table 1 below.

Table 1: Digital Dexterity at CAUL institutions

Established position with supporting resources	5
No established position but policy under development	3
Investigating options	11
Not on our radar	5
Other	6

The survey responses highlighted the interchangeability between the terms 'digital dexterity' and 'digital literacy', perhaps suggesting a misunderstanding of the difference between them. Of the five responses indicating an established position with supporting resources for digital dexterity, three referred to policies on digital literacy.

As part of her research on "Decoding digital literacy", Jo Coldwell-Neilson identifies both a lack of agreed definition of the term "digital literacy" as well as difficulty in demonstrating how educational institutions and curriculum currently work to enable the range of skills usually associated with the

term. Along with a range of other issues, Coldwell points to the difficulty in transitioning something with no clear definition to an active curriculum that facilitates the development of these skills in students (Coldwell-Neilson, 2017b). The impact of this is twofold:
1. a potential capability gap in students that is not necessarily identified upon entry to higher education; and
2. an assumption by employers and educators that these skills have been acquired during the course of study.

This perception that skills have been acquired is often shared by the graduates themselves and there are indications that students and graduates occasionally overestimate their digital dexterity (Coldwell-Neilson, 2017b, p.88). This could be a significant obstacle in enabling an organisation to achieve digital dexterity. A lack of basic digital literacy and, perhaps even more importantly, the ability to identify and address gaps in digital fluency is the foundation of the ability to leverage the skills and understanding that will enable graduates to meet employer expectations and facilitate a digitally dexterous environment.

In order to address this, Coldwell-Neilson recommends that universities take such approaches as:
- setting digital literacy benchmarks for commencing students as something possessed on entry. (CAUL members would suggest this is expanded out to all digital dexterity capabilities covered in the Framework);
- actively committing to building digital capacity, including the development of digital skills contextualised within disciplines;
- a scaffolded approach so that digital competence is developed throughout a course of study.

The resulting future state is one where a benchmark of digital competence sits alongside those related to other "foundation literacies" (Coldwell-Neilson, 2017) with curriculum-based strategies aimed at facilitating its acquisition across the whole of a course of study. The role of higher education institutions in this is central and any vision of a digitally dexterity framework needs to include the skilling of academic and professional staff in this context to ensure that digital dexterity and competency is actively enabled and integrated within learning, teaching, research and service provision in the institution. The CAUL survey results undertaken by the Digital Dexterity Framework team showed that most respondents are either developing or investigating a framework and supporting resources. A collaborative approach to defining and developing a common framework and set of capabilities therefore seemed very timely.

In late 2017, the NMC Horizon Project conducted an international review of institutional frameworks in its report *Digital Literacy in Higher Education, Part II*. The frameworks that were examined portrayed digital literacy as "plural, encompassing multiple elements of requirements, and usually combining technical, psychological, and interpersonal dimensions...none focus solely on technical skills, but instead add social, psychological, or cultural competencies" (p. 4). The review is an excellent overview of existing frameworks, and highlights that the top three elements common to all are communication, critical thinking and content creation. Other high-ranking capabilities include technical skills, civics and citizenship, and copyright knowledge. These multiple elements of requirements align with the Gartner definition of digital dexterity.

The CAUL Digital Dexterity Framework
After reviewing the literature and examining existing frameworks, the Digital Dexterity Framework project team decided on six capabilities of digital dexterity, adapted from the Jisc, University of Adelaide and Gartner frameworks:
- ICT proficiency and productivity
- Digital learning and self-development
- Digital creation, problem solving and innovation
- Collaboration, communication and participation

- Information, media, and data literacy
- Digital identity and wellbeing

The Digital Dexterity Framework project team also conducted a desktop scan of graduate attributes/capabilities across Australian universities. From this emerged a number of common attributes that can be used to frame a graduate persona. Graduates from Australian and New Zealand universities will be socially responsible and ethical global and local citizens, with practical discipline knowledge, who are communicators, innovators, collaborators, critical thinkers and have the willingness to be lifelong learners. It is clear that higher education institutions aspire to have their graduates *learn* the critical skills, knowledge and social practices that align with what employers need in their employees to remain competitive and optimise business outcomes. This alignment bodes well for the future of the Australian workforce and confirms the critical importance of digital dexterity.

A digital dexterity community of practice
The CAUL Digital Dexterity Framework outlines the capabilities students need to be digitally dextrous but if academic libraries are to share responsibility across institutions for building student capability then it follows that library staff also need to be capable and confident in the digital environment. Outcome 2 of the CAUL Digital Dexterity Program focused on building capability among library staff working at CAUL member institutions and extending to our colleagues in CONZUL (Council of New Zealand University Librarians) member institutions in New Zealand. The Digital Dexterity Capability project team reviewed frameworks related to staff digital capability (La Trobe, 2015; Jisc n.d.-a). which reinforced that to fully participate in building a digitally enabled organisation library staff need to develop capabilities alongside peers. While libraries are well down the path to the brave new world of digital, our staff, like those at any organisation are at different levels of confidence and capability. To keep up with the expectations of students, staff and employers, it is critical that library staff feel comfortable and competent in the constantly evolving digital space.

In interpreting the project brief to 'develop tools to assist CAUL members to improve their capability in digital dexterity', the Digital Dexterity Capability project team took the approach that a holistic and critical understanding of staff digital capability could be achieved through generating conversations about shared practice and the common development needs of library practitioners. It is an approach often adopted in the development of Frameworks for students (Salisbury et al, 2017) and in looking at the project through this lens it became apparent that the best 'tool' for CAUL members to improve their digital capability would be a community of practice. Grassroots capability development through the idea of a community of practice was strongly appealing from the beginning. A community of practice approach aligns well with the collaborative ways of working that are common in academic libraries. It also positions practitioners themselves to improve the digital capacity of the whole CAUL community by participating in a program of resources and activities that support self-directed learning, collaboration, networking opportunities, resource sharing, and future open educational resource development.

The major challenges for the Digital Dexterity Capability project team were how to design a sustainable and scalable community of practice and how to establish and implement infrastructure to enable the Digital Dexterity Community of Practice (DigiDex CoP) to grow and flourish to meet the ongoing needs of CAUL members. While it was envisaged from the outset that the DigiDex CoP would be curated by academic library staff for academic library staff and grow organically, it was also recognised that the DigiDex CoP would benefit from a carefully nurtured start and ongoing support. To ensure the best possible chance of success for the DigiDex CoP several strategies have been put in place. The first is to establish a network of Digital Dexterity Champions within the DigiDex CoP. CAUL members have each nominated one Champion who together form a more focussed group within the community of practice. The Champions will take a lead in advocating for staff digital capability in their institution and maintaining the momentum across the DigiDex CoP. The network of Champions will specifically focus on digital dexterity initiatives for the community of practice, for example sharing open educational resources, organising events and activities and

communicating best practice, tips and tricks. Through the Champions we are seeking to bolster the DigiDex CoP by enabling peer-to-peer sharing of ideas, information exchange and networking to enable digital curiosity and discovery. The primary communication channel is a cross-sector e-list anyone can join (http://mailman.anu.edu.au/mailman/listinfo/digital-literacies-anz) which leverages a previous digital literacies online community (Salisbury et. al. 2016). The team has also coined #MyDigiDex as a hashtag on social media to facilitate conversations in the digital space and to start to make those critical connections.

The Champions network is designed to nourish and support the DigiDex CoP, but who supports the Champions? To help maintain momentum, sustain and nurture the DigDex CoP over the longer term the Digital Dexterity Capability project team brokered a partnership between CAVAL and CAUL. Working with the Digital Dexterity Capability project team in first the instance CAVAL will facilitate the Champions network so they are supported to lead the DigiDex CoP. With a long history of engagement with libraries in Victoria and across Australia and experience hosting professional development events and opportunities for academic librarians, CAVAL was an obvious choice to partner with CAUL. Our first partnership event was the Digital Dexterity Framework and DigiDex CoP launch at ALIA Online in February 2019. This event was attended by over 70 librarians and facilitated by Helen Beetham, an international expert and researcher in digital capability. The success of this launch event bodes well for future community of practice activities to foster the sharing of knowledge and creation of networks. This month (June 2019), the Digital Dexterity Capability project team and CAVAL will bring the Digital Dexterity Champions together to kick-start a more formal agenda for the DigiDex CoP. A priority will be to establish communal practice around collecting, sharing and storing open resources that can be used across the CAUL institutions. Other activities on the agenda include planning future events. Supported by the Champions, the DigiDex CoP has the potential to develop in exciting and as yet unknown new directions. The advantage of establishing the DigiDex CoP in this way is that it can evolve based on the needs of members with guidance and support from the Champions, CAVAL, the project team and new partners as they come on board.

As we continue to develop a vibrant DigiDex CoP program, evaluation is the next important step. The evidence gathering for the program evaluation has three phases. The evaluation seeks to test the effectiveness of the approach taken to build staff capability. The first element is a pre-program survey of library staff. This survey will provide a baseline for confidence and capability in staff around digital dexterity. The survey will be repeated a second time in about 12 months. The third element of the evaluation process is a deep dive into the experiences of the Champions through semi-structured interviews. Together the two surveys and the interviews will inform next steps and determine if the program has been sustainable and/or effective.

Conclusion

CAUL's position is that the adoption of a proactive approach to digital dexterity is a fundamental aspect of the mission of university libraries, now and for the foreseeable future. Universities and their libraries have a unique opportunity and are ideally placed to equip Australian workers with the skills and higher-order knowledge required to thrive in a world in which the future fields of work are as yet unknown. The key role of higher education institutions in developing the workforce of the future, in partnership with industry, is undisputed. University libraries can and should stake their claim in supporting skills development in core aspects of digital dexterity not only for students but also for professionals. By taking a grassroots approach, not just to developing the framework, but also to finding a sustainable way to build capability across all Australian and New Zealand university libraries, CAUL hopes to demonstrate that a peak body, using a broad group of enthusiastic volunteers, can create an effective and sustainable approach to developing digital dexterity in its workforce, and by extension, in the university sector.

Acknowledgements

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