Developing Digital Capability:
What archivists can learn from the GLAM sector

by

Suzanne Marie Goss

Submitted to the School of Information Management,

Victoria University of Wellington

in partial fulfilment of the requirements for the degree of

Master of Information Studies

July 2017

Contents

Abstract

Background: Although commentators in the archives profession have observed a paradigm shift during past 30 years, there has been very little formal research about how archivists can develop their digital capability to successfully engage with the emerging digital paradigm.

Methodology: This qualitative research conducted semi-structured interviews with seven members of the GLAM sector in New Zealand and Australia to identify: the necessary skills for engaging in the digital paradigm; how participants approached the development of their own digital capability; and how their organisations could support this.

Results: Archivists need to approach the development of digital capability in relation to their existing knowledge. To support this, professional associations need to understand the needs of members at various levels of capability, and workplaces need to support an environment that actively resources digital capability development.

Implications: Archivists and archives organisations could look outside of their profession and sector for examples of how successful digital capability development can be implemented. Further specific research about the implementation of digital maturity frameworks in archives organisations would be a beneficial next step. In addition, a larger quantitative study about the soft skills for digital capability would be useful for archives organisations developing resources for their members.

Keywords: archives, digital capability, GLAM, paradigm, soft skills, Web 2.0

1.0 Background

1.1 Topic Statement

This research is about the engagement of the archives profession with the emerging digital paradigm.

The purpose of this qualitative research is to identify how archivists in Australasian archives organisations can approach the development of the skills and capability needed for engaging with and successfully navigating the digital paradigm.

This was achieved by gathering information in semi-structured interviews from members of the Australasian GLAM[1] sector (including archives) about their relevant thoughts and experiences around the topic. The wider GLAM sector was chosen as the basis for this research because of the wider experience that the research could draw on, while still being applicable to the archives profession.

The resulting resource outlines some considerations for archivists wishing to develop their digital capability – based on the experience of others – as well as giving insight into how archives organisations can support their members to develop their digital capability.

This research benefits archivists interested in continuing professional development by sharing experiences and guidance around developing digital capability, as well as beginning archivists looking to supplement their learning with the appropriate digital skills for their workplaces and equivalents. It also provides insight for archives organisations supporting members who are engaging with the digital paradigm, as well as organisations and members of the wider GLAM sector, by identifying how the development of digital capability can be researched and applied in their respective professions. The communities – both virtual and local – served by archives, who

[1] Galleries, Libraries, Archives and Museums

increasingly expect Web 2.0+ services[2] from GLAM organisations, also benefit from digital capability development within the archives profession.

1.2 Assumptions and limitations

Assumptions made in this research are that:

- Society is shifting towards expecting Web 2.0+ services from the GLAM sector, especially social media-type interconnectivity, ease of access to information and the personalisation of information as delivered by the semantic web.
- Archives organisations and professionals have experienced differing rates of adaptation to the emerging digital paradigm, and there are a variety of reasons for this.
- Participants are aware of commonalities and differences across the GLAM sector.
- Participants are considering the capability of archivists who are not digital specialists.

Limitations of this research are that:

- It is designed from a western cultural, Australasian perspective and may not accommodate indigenous cultural or Northern hemisphere perspectives that would have an impact on similar research.
- Interview numbers are limited due to time and resource constraints. Because of this, it was not possible to use random sampling to select participants. Therefore, the dependability of extrapolation across the archives profession may be somewhat compromised.
- Participants have been sourced from people either known to the researcher or recommended by other participants, possibly decreasing the objectivity of the research.

It is acknowledged that the limitations of this research may have an impact on the transferability of the outcomes, however, it provides rich data for consideration in local contexts and valuable insights

[2] See 1.5 Terms of referencefor explanation of terms

for comparison with other contexts, as well as a basis for further study that addresses these limitations.

1.3 Previous research

The variety of impacts of the archives profession's engagement with the increasingly interconnected and evolving digital paradigm are well documented both formally in academic literature, and also in less formal blogs and social media forums. There is excellent data available around digital skills for employment purposes, such as CILIP's[3] *Professional Knowledge and Skill Base* (CILIP, 2013), WebJunction's *Competency Index for the Library Field* (OCLC 2009) and the National Archives of Australia's *Digital Information and Records Management Capability Matrix* (NAA, 2017). However, a search of academic databases for formal research documenting the non-technical digital skills needed by archivists was unfruitful. Moreover, there appears to be little, if any, formal research documenting how archivists have developed digital capability in the course of the digital revolution.

Initial scanning of resources on the internet found several blogs by respected archives commentators discussing the skills needed by new archivists. A post in Kate Theimer's *Archives Next* blog (Theimer, 2012) lists advice for future archivists including the necessity of loving technology, continuing learning even after graduation, and being "willing to succeed/fail and then talk about that". A similar post on the Smithsonian Institute blog *The Bigger Picture* post is relevant not only for the post itself but also for the comments adding perspective to the conversation. The post says that archivists should be able to:

> "Work both independently and on a team; demonstrate strong research and writing skills; exhibit attention to detail; [be] creative problem solvers; and show a natural curiosity… a solid background in basic computer skills will be essential".

[3] Chartered Institute of Library and Information Professionals http://www.cilip.org.uk/

The author goes on to say in the comments section of the post that the digital skills of the future archivist should include:

> "A good command of at least some of the more advanced features of word processing [etc] and other standard software… [and] of advanced searching features, experience searching in a variety of databases, and a basic understanding of database design. They should have a basic understanding of how markup languages work [and] the basics of simple web design. They should be familiar with scanning techniques and settings and photo editing [and] they should also be familiar with most of the major social media services".

Blog posts such as these point towards the need to conduct focused research about the digital skills needed by archivists. These and similar conversations happening at conferences and in social media need to be discussed in more depth than can be captured in a 500-word blog post or a 120-character tweet.

Although archives are associated by their commonalities with the wider GLAM sector, they are an environment distinct from their associates, with unique problems to be understood, and possibly unique solutions to be applied. The archives profession needs evidence which could indicate opportunities for improvement, enabling self-reflection on the discipline's strengths and vulnerabilities. Although this research draws on the experience of the wider GLAM sector, the themes that emerge from the data are able to be applied across to archives organisations.

This subject should be explored in more depth, in order to ensure that archivists and their organisations can skilfully negotiate and integrate the effects of the emerging digital paradigm, enabling the archives profession to move forward proactively rather than reactively. In order to achieve this, it is important to identify the requisite skills for navigating the digital paradigm shift, beyond simply documenting changes to the environment as they arise.

1.4 Ethical considerations

As the data for this research was gathered via interview with members of the GLAM sector, there is the risk that respondents could be personally identified by their answers. This was mitigated by identifying participants by a letter rather than by name, and removing references to identifying factors such as the names of organisations.

There is also the risk that raw data could be used for something other than the proposed research. Access to the data will be restricted and kept securely until it is destroyed. All participants signed consent forms clearly outlining the intention of the research and participated free of coercion.

The research was conducted with the approval of the Victoria University School of Information Management's Human Ethics Committee, and following their guidelines.

1.5 Terms of reference

Because the GLAM sector's engagement with the digital paradigm is continuously evolving, so too is the language used to describe that paradigm, and discussion about meaning is ongoing. Therefore, there is the need to clarify the meanings of some of the terms used in this research. Some are currently accepted terms, and some are the author's interpretations of terms as applied to this research.

The term 'digital' is multi-layered: referring to archival items that are either born digital or digitised; Web 2.0+ tools and environments such as social media; the changes that the increasing uptake of these brings to the archives environment; the changes that they bring to the expectations of the communities that archives exist in.

'Web 2.0+' describes the internet environment from Web 2.0 onwards, and the evolution to Web 3.0 (the semantic web). It also encapsulates the changes in the expectations of the communities of GLAM organisations, as discussed previously.

The evolution from an analogue (paper-based) paradigm towards a digital paradigm is popularly known as the 'digital revolution', or 'digital disruption'. This research uses the term 'emergent digital paradigm' when referring to this evolution and its impacts, changes and effects. According to commentators, this paradigm has been emerging in archives for at least 30 years and this is discussed in the literature review.

This research uses three terms to describe the measurement of the ability of archivists to engage with the emergent digital paradigm (Figure 1). The building blocks of **digital literacy** are the **digital skills** an archivist might learn in order to engage with technology. **Digital capability** is the ability to adaptively apply one's digital literacy in an environment. In addition to this, the term **digital maturity** is used of organisations when the interaction of the environment which they support and the capability of the archivist are optimal. Digital maturity is something that can be worked towards and is measurable.

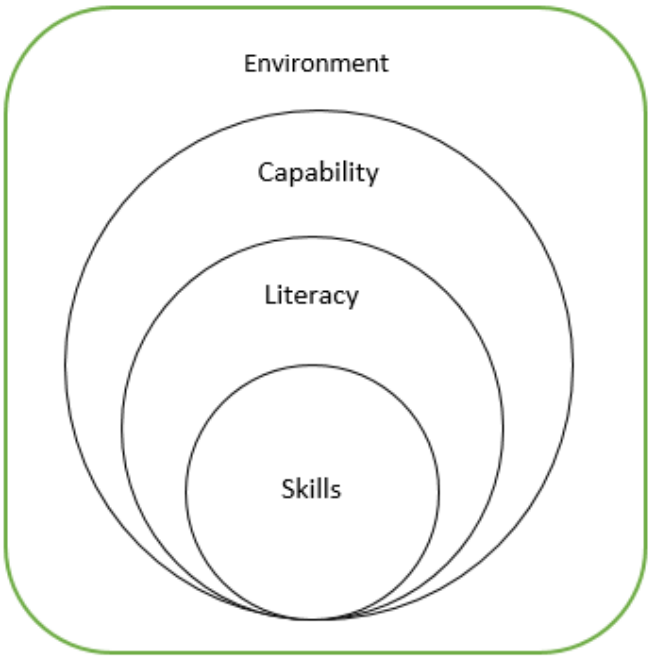

*Figure 1: D*iagram of the elements of digital capability. © Goss, 2017

1.6 Literature review

Literature around three main themes was reviewed for this research. Articles about the changing archives paradigm explore the context that the research arises from. Following this are articles identifying the skills needed by archivists to address the changes brought by this paradigm. Also included is a section on comparable sectors addressing similar issues.

Due to the constraints of the study, one closely related subject in this area has not been included in the review – literature listing core competencies for archivists. Although it is one possible starting point for research around development of digital capability, the author found that the majority of these lists contained only technical skills, which are not the focus of this study.

1.6.1 Context

Kate Theimer's *A Different Kind of Web: New Connections Between Archives and our Users* (Theimer, 2011) explores the challenges of adapting to an information environment heavily influenced by the internet. At the time it was written, the phrase 'Archives 2.0' had been developed in response to the influence of Web 2.0 on the archives discipline (within five more years the profession would also see the emergence of Web 3.0).

Theimer's book includes a series of case studies about the variety of uptake of digital technology in archives. The first chapter by Joy Palmer and Jane Stevenson of the United Kingdom's Mimas [4] opens with the observation that "the move to new forms of outreach is… less about technological change than a shift in mind-set… [emphasising] openness, sharing and collaboration" (Palmer and Stevenson, 2011). Many of the book's contributing authors reiterate that the roles of archivists are evolving, which is succinctly summed up in Theimer's conclusion comparing the characteristics of Archives versions 1.0 and 2.0.

[4] Formerly a think tank for education and research technology based at the University of Manchester, now integrated into Jisc: see https://www.jisc.ac.uk/website/legacy/mimas

Theimer recognises a new paradigm in archives, and the case studies illustrate the implementation of the technology arising from it. The next step could be to address how archivists might engage with the changes in the environment – and the requisite skills for adapting to changes – that new technology brings.

Although it is fifteen years old (and written three years before the now ubiquitous Facebook was launched in 2004) Luciana Duranti's *The Impact of Digital Technology on Archival Science* (Duranti, 2001) has been included in this review because, like Theimer, she observes a paradigm shift in the archives profession. This gives context to, and therefore an understanding of the evolution of the environment as we see it today. It also provides a baseline for measurement of time between the archives profession's observation of changes in the environment, and its reaction.

Duranti's ground-breaking use of systems theory to describe archival science, and her description of archives as an ecosystem, is an innovative approach that reflects a less linear and more interactive, interconnected archives profession. Systems theory observes that systems are dynamic and adaptive, as outlined in the article, and Duranti's observations challenge the well-worn stereotype of archives as being static and dust-gathering.

Duranti says that archivists not only need new ways of working, but also new ways of looking at themselves to be able to understand what they need. She has successfully achieved "[re-examination of] how our present and emerging culture organises its necessary information and wisdom at the macro level" (Taylor, 1987) by creating a change in perspective that initiates a conversation not available to a case-study based approach.

Taylor, Duranti and Theimer, as well as others[5], all observe a paradigm shift in archival theory and practice, and agree (in Duranti's oft-paraphrased words) that this shift brings "a new way of thinking

[5] Most notably for this review, MacNeil's 1994 *Archival theory and practice: Between two paradigms.* and Cook's 1997 *What is past is prologue*).

about the same things". This leads to the question of *how* the archives profession might think in a new way.

Anne Gilliland's article *Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment* (2000) places archivists in the 'metacommunity' of diverse professionals "responsible for designing, managing, disseminating, and preserving digital information resources [which] includes librarians, archivists, preservationists, museum professionals, information system designers, technical information specialists, and sometimes information creators themselves". She notes the shift towards the convergence of GLAM professions and iterates that the GLAM metacommunity must draw from all of its member professions in developing a dynamic paradigm.

This article marks a watershed in thinking around the archives profession – in which archivists move from being a discrete profession, into being a functioning part of an inter-influential, dynamic ecosystem. What does this evolution mean for the development of the digital capability of archivists and their organisations, and how best for the profession to participate?

According to Cook's oft-quoted 1994 article *Electronic Records, Paper Minds*, we must "recast our paper minds to deal [with] electronic realities" – a suggestion that is still appropriate thirty years after it was published.

1.6.2 Skills

What effect does a paradigm shift have on the daily preoccupations of archivists? One measurable effect is the necessity of developing new skills to adapt to job descriptions that evolve as the environment changes. Traditional lists of skills for archives and other GLAM professions such as those mentioned in **1.3 Previous** researchfocus on core competencies for job descriptions. *New Skills for a Digital Era* (Pearce-Moses and Davis, 2008)[6] takes an imaginative approach to recording the evolution of archivists' job descriptions. It includes an annotated inventory of the knowledge and

[6] A book resulting from a colloquium sponsored by the Society of American Archivists (SAA) and the National Archives and Records Administration (NARA) among others.

skills required of archivists, supported by the editors' reflections on the findings. The latter half of the book is comprised of a series of case studies around the topic.

In their discussion the editors state that, "While the core archival principles and functions remain, practice is changing. This shift means that information professionals must reconceptualise many principles that serve as the foundation of traditional practice".

The inventory's introduction also discusses the knowledge needed by archivists – such as understanding the 'information ecosystem' in which archivists participate, and technical skills. Noteworthy is the inclusion of soft skills, i.e. behavioural capabilities such as communication, networking and problem solving, as well as management and technical skills. The editors also note that although the colloquium was only intended to identify technical skills, "participants kept returning to the other, 'soft skills' that were required". This may indicate that the trend towards publishing case studies focusing only on technical skills is missing a critical element that would assist with their integration. A logical next step would be to give guidance about acquiring the skills and knowledge in this long list, as well as some scenario-based prioritisation of which skills are preferable to others.

1.6.3 Comparable sectors

United Kingdom non-governmental organisation Jisc's[7] work on digital capabilities *Developing Digital Knowhow* (Beetham, 2015) resulted from a literature review and semi-structured interviews with stakeholders involved in developing and supporting digital capabilities in higher education and further education. The research is about the digital capability of organisations rather than individuals, and although the findings are specific to the education sector, the results are possibly transferable to archives organisations – for example, the observation that the employment environment is becoming more entrepreneurial and fragmented.

[7] Jisc no longer capitalise their acronym. https://www.jisc.ac.uk/

The term ‘digital capability’ as used in this research has evolved from Jisc’s research around the ‘digital literacy’ concept, which produced Beetham and Sharpe’s oft-referenced ‘digital literacy development pyramid,’ (figure 2) (summarised in Davies, 2015). The digital pyramid approach is useful because it places skills in a dynamic relationship with the other aspects of digital literacy. This approach could be explored further by archives organisations engaging with changes in perspective as discussed by Taylor, et. al in 1.6.1 Context.

Taken as a whole, this series of articles demonstrates that digital paradigm change is a dynamic and rapidly evolving area of research. In the 2015 article, the terms ‘digital capability’ and ‘capabilities’ seemed to be used interchangeably, and the delineation between the use of these and of the terms ‘digital literacy’ and the more traditional ‘competencies’ had potential for further exploration.

Jisc’s next step in digital literacy research, *Developing Organisational Approaches to Digital Capability* (Beetham, Killen and Knight, 2017), further clarifies the terms used around digital capability. In the 2017 article, Jisc also acknowledges the importance of organisational infrastructures in building digital capability, and while it is specific to the education sector, the headings used in the article point towards potential areas of attention, such as digital professionalism, that the archives profession could model from.

Figure 2: Digital literacy development pyramid model, Beetham and Sharpe (2010) from https://www.jisc.ac.uk/full-guide/developing-digital-literacies

Looking to the business sector, the consulting firm McKinsey's series of articles based around *Raising your Digital Quotient* (Catlin, et. al. 2015) identify the elements contributing to the digital success of companies, and how to "get this right". This article posits that to make the most of digital opportunities, organisations should be asking themselves three questions:

- Where will the most interesting digital opportunities and threats open up?
- How quickly and on what scale is digital disruption likely to occur?
- What are the best responses to embrace these opportunities proactively and to reallocate resources away from the biggest threats?

These and similar questions could model questions for archives organisations planning for digital capability. However, whether there are opportunities for archives organisations and archivists in the digital paradigm, and what those might be, need to be identified first.

The New Media Consortium's *New Horizons Report* (Adams Becker et. al., 2017) reports on sector trends expected to emerge over the next five years after the report's annual release. 2017's Library Edition called on 77 experts to identify key trends, challenges and technological developments affecting libraries. The use of additional social media resources supporting the delivery and dissemination of the report, such as a Wiki for the research group and a Twitter profile, also demonstrates transferable applications of Web 2.0+ technology for the GLAM sector.

In the introduction to the section on improving digital literacy, the authors point out that digital literacy "transcends understanding of the digital environment, enabling intuitive adaptation to new contexts, co-creation of content with others, and an awareness of the risks and freedoms that digital interactions entail". This is followed up by a section on the future of work, which points out that system-wide change must have the "explicit support and commitment from senior leadership". These two factors illustrate the resonating impact that the emergent digital paradigm is having on not only the services but the structures of GLAM organisations.

In summary, the literature shows that the archives profession has acknowledged a change in paradigm for at least the past 30 years, and that it is generally agreed that this shift is changing how archivists do their jobs. The profession may need new tools and new ways of thinking about itself in order to adapt to the paradigmatic shift, and archivists should be considering which professions and sectors we could look to for translatable frameworks to do this.

There is an abundance of archives-focused literature reflecting that 'things have changed/are changing' and it is now perhaps disingenuous to continue observing that 'digital is the future'. The archives profession would perhaps be better placed to observe that the digital paradigm has been affecting archives organisations for at least thirty years, and that this will only be felt to increase in the future.

The overwhelming trend towards case-studies about the archival applications of digital technology is likely because the ubiquity and tangibility of technology is easier to account for than the 'soft skills' that enable archivists to adapt to changes in the environment. Jisc's research indicates how soft skills might be identified and supported in the archives discipline. However, even though there are plentiful resources available to learn digital tools, as Pearce-Moses and Davis (2008) point out, "Many hesitate because they do not know what they need to know".

Beyond the challenge of learning how to use digital technology is the challenge of integrating digital thinking into archives environments. This research will take the next step by identifying what archivists and archival organisations need to know about engaging with the digital paradigm – beyond the typical case studies – and how to go about building the capability to do it effectively.

1.7 Research design

To accommodate the fact that archivists are employed in a diversity of positions and organisations, members from a wide variety of GLAM sector organisations – among them, large government-funded organisations, volunteers, businesses and small organisations – were chosen for interviews.

To gain insight into this, the first question sought information about the participant's background and how they came into the GLAM sector.

The research aims to discover the skills needed by archivists, in order to validate the assertions made in social media, and then to find information about how those skills would be developed into digital capability. It also aims to discover information about the support needed from organisations to develop capability, and the pathways to capability that the participants took themselves.

1.7.1 Objectives

- To identify the skills that archivists need to develop in order to engage effectively with the emergent digital paradigm
- To learn from members of the wider GLAM sector how they developed their own digital capability
- To identify the methods that may be employed by archivists, their organisations, their learning institutions and their professional bodies to develop archivists' digital capability.

1.7.2 Research questions

- What skills does a (non-digital) archivist need in order to understand and engage with the digital paradigm (in addition to 'traditional' archives skills)?[8]
- How could archivists develop their digital capability?
- How could archivists be supported by their organisations to develop their digital capability?

1.8 Methodology

A qualitative approach was chosen for this research because it allows an exploration of the context that quantitative research may not capture. The opinions and experiences of participants were needed to achieve this, and a qualitative approach using open-ended questioning captured the richness of this data.

[8] Such as arrangement and description, understanding of provenance, and *respect des fonds,* for example.

1.8.1 Collecting information

Time and resource constraints of the research influenced the research design, namely the number of participants. To ensure that the restricted number of participants did not impact on the quality of the data, selection was based on their meeting two or more of the following criteria:

- Previously published perspectives (both formal and informal) about the emerging digital paradigm from a GLAM perspective
- Representing a unique perspective from other participants
- Experience with implementation of and/or engagement with a digital paradigm
- Ability to contribute perspective that builds understanding.

Data was collected in semi-structured individual interviews with seven participants from across the GLAM sector. Participants were [S1]based in Australia and New Zealand, and interviews conducted in person and over Skype.

Interview was chosen as the method of data collection because of its compatibility with the qualitative research method, and the ability to gather the anecdotal evidence that the researcher required. Pickard (2013) notes that “interviews are usually used [in research] when we are seeking qualitative, descriptive, in-depth data that is specific to the individual”.

Consistent with this was the choice to develop open-ended interview questions, allowing participants to talk freely about their opinions and experience. As a baseline, every participant was asked four identical ‘starter’ questions, allowing consistency and comparison between responses. This approach also allowed the interviewer to prompt the participant for more information when necessary.

1.8.2 Data Analysis

In a larger study, according to Williamson, et. al. (2013), the raw data of the interview transcripts could be analysed using coding, with the creation of categories as the interviews were collected. However, in a study of this size, this depth of analysis is not viable.

While not using an acknowledged coding framework, analysis has been based on the principles of coding, namely to identify the themes coming through in the results (Williamson, et. al., 2013). This was achieved by identifying each of the four research questions as a 'theme', under which responses were grouped for their similarities, differences and notability. This approach met the objectives of the research by allowing the researcher to: identify the full variety of responses, as well as the strongest responses; identify the actions that the majority of respondents took to develop their capability; and to identify participants' effective approaches to development. This enabled discovery of not only the variety of data but also its depth, and generated rich data from a relatively small qualitative study.

There are further opportunities for research re-using or building on the collected data, for example, it would be possible to use the data to formulate interview questions at a more granular level. Themes identified in this research could also be used as a starting point for further research exploring one or more of the themes in depth. Future quantitative research on a larger scale would also be an opportunity to generate more specific data about this subject.

2.0 Results

Results have been grouped by each question, in order to define themes, and then categories within each theme. Some noteworthy responses have been included as examples to give more context.

2.1 Question one: Digital aspects of GLAM roles.

The participants' roles and experience within the GLAM sector were varied – librarians, archivists, digital humanities practitioners, management-level, volunteers, operational-level, recent graduates and people involved in professional organisations. The size and type of organisations that participants were employed in also varied greatly. Six of the seven participants identified themselves as belonging within more than one GLAM profession. A full list of participants' professions is at Appendix 1: Professions of participants .

When asked about their background, six of the seven of participants noted that they had non-linear or non-traditional pathways into the GLAM sector. With only one of the seven participants employed in the GLAM sector for their entire career, participants' pathways into GLAM included publishing, visual arts, e-learning, art history, commerce, music, retail, law and advertising, among others.

Three of the participants had a good understanding of digital technology before entering the GLAM sector, learned through previous jobs and for personal interest – for example, one participant had cut their digital teeth constructing Myspace pages for their friends' bands, while another had previously been involved in advertising. Three participants had learned their digital skills on the job in the GLAM sector, and the remaining participant had completed a Diploma of Library Studies that had included an emphasis on digital technology.

All participants were university educated, although only two participants had tertiary-level[9] education in courses specifically about the GLAM sector. None of the management-level participants had tertiary-level education in management.

Some participants noted that they held multiple roles within one job description, such as communications, management, volunteer expert, advocate, operational, project management. For example, when asked about their current role, Participant A[10] responded that, "I'm officially 'Librarian', but that encompasses heaps of stuff. That includes archiving and more traditional librarianship and knowledge management as well."

Significant moments in the participants' digital evolutions were discussed and a pivotal moment or opportunity was often identified during interviews as being the turning point for participants' interest in the digital. These moments included:

- The workplace's knowledge management expert left, creating a knowledge gap in the organisation that the participant was motivated to fill
- The participant was sponsored to attend a digital humanities conference and there was inspired to develop a search tool implementing the semantic web for their organisation
- Leaving a depressing advertising job, the participant was hired by a major organisation in the GLAM sector for a digital position
- Identifying that their profession (film and audio) had problems around digital preservation, the participant was motivated to seek an answer by working towards a position in the GLAM sector that would enable them to find solutions
- The participant knew they didn't want to continue working in the corporate sector and was coincidentally offered a job in a GLAM organisation by a friend

[9] Bachelor's degree or higher
[10] To avoid unintentional identification of participants, they have been identified by letters.

- After trying a GLAM transcription project and not liking it, the participant found a project that they became "obsessed" with and it hooked them on transcribing
- Their university course had a focus on digital technology and set the expectation that most of their work after graduation would be done online.

In all of these examples, the participant experienced a moment in which they understood the benefits and potential applications of the digital paradigm, which led to a personal interest in developing their capability.

Reflecting on their development, Participant B said, "I guess it is a continuum and [each] role has dramatically changed the way that I have worked when I started them", reflecting the digital capability development of all of the participants – each opportunity has led to another in which their capability was developed more in each role as they progressed.

Participant C said that they had committed to "only working in [GLAM] centres of technology because… they are more agile and supportive of… new ways of working… there is an ecosystem of support for those types of things". This participant had seen an ideal environment for their digital capability development and now makes their career choices based on this preference.

2.2 Question two: Approaches to increasing digital capability

Participants employed a number of methods to develop their digital capability. They were either supported by their organisations to spend time on development, or they pursued it in non-work time and applied it to their work later.

In addition, Participant A began pursuing the development of their capability during working hours, though not having the support of their supervisor meant that they could only do so when their supervisor was not present. This changed when then the supervisor left the organisation and the participant's new capability was formally acknowledged, enabling them to become the organisation's knowledge management expert.

Three of the participants had workplaces which actively engaged staff in developing digital capability. Some of the ways in which this was achieved are listed in 2.4.2 Workplaces.

The methods of developing digital capability mentioned most often were using social media, attending conferences, having other like-minded people available to talk with, and conducting research on the internet. Google was specifically mentioned by some participants as a way of finding information, as was Lynda.com[11].

2.2.1 Social Media

Social media was used by participants as a way of learning about new technology, networking and sharing information. The social media site mentioned most often – by four of the participants – was Twitter. Other Web 2.0+ resources specifically named by participants were:

- Instagram
- YouTube
- Snapchat
- Wikipedia
- WebJunction
- 23 Things
- Slack
- Trello
- Google Drive
- Zotero

Participants used Twitter for getting the highlights from conferences and forums that they were unable to attend in person, by following the events' hashtags.

Following hashtags on Twitter also allowed them to "get a really good understanding of who the participants are, who are the movers and shakers in that space". They would also follow those peoples' Twitter accounts and "see what they talked about, what kind of institutions they are at, check out their case studies" (Participant B).

[11] An online collection of workshops and lectures on various aspects of professional development, including digital skills like coding and using software. https://www.lynda.com/

Following GLAM-related hashtags was described as being “an ongoing goldmine of information… enabling you to dive right into the conversation, even if you are just skimming and reading other people’s stuff, not even participating in the conversation” (Participant B).

Participants also used Twitter to share their participation in digital initiatives both with their work colleagues and externally of their organisations. Participant C said that Twitter was “really good for networking with different communities of practice… not only networking with other librarians, also other GLAM people, academics”. Participant D said, “Don’t be afraid to jump online and ask things. I use Twitter a lot, and I ask questions on Twitter, and I’ve built a good Twitter community where I have specific people that I can ask specific questions”.

Twitter enabled participants to develop acquaintances and even friendships that may then extend into ‘real life’ when participants met their acquaintances at regional, national and international conferences and networking events, etc.

2.2.2 Conferences

Not all participants mentioned the virtual or physical attendance of conferences as an important part of their development of digital capability, however two out of the three participants at management level and the one participant at senior level said that conference attendance was an important part of their development for both networking and information gathering about the application of new information. They also used YouTube to watch recorded sessions from conferences that they could not attend in person.

All three of the above participants said that it was important to attend conferences outside of their delineated professions – librarians attending digital humanities conferences for example – because “we need to think about the kind of skills we are bringing into the community, not just circulating the same skill set around and around again” (Participant D). This same participant said that they had “probably got as many skills… from engaging with communities other than the archiving community”. Participant B commented that, “It’s really important [to look outside the sector]

because [the GLAM sector] have a tendency to usually not be the early adopters – with a few exceptions – but in the commercial world… that sort of thing usually happens quicker".

Participant E said that being sponsored by a philanthropic fund to attend an overseas conference was "the turning point" in their interest in developing their digital capability. This prompted them to take on a project transforming how their workplace shared information about access to their resources.

Participant F, a self-funded GLAM member, commented that although they couldn't afford to attend an entire conference one particular year, they chose one particular workshop in that conference to attend, which greatly increased their ability to participate in the transcribing projects they were involved in.

The types of conferences participants attended outside of their profession were:

- Digital humanities (e.g. Linked Open Data in Libraries, Archives and Museums)
- Research data management
- Libraries
- Museum conferences (e.g. MuseumNext; Museums and the Web)
- Digital (e.g. New Zealand National Digital Forum)
- Corporate sector (i.e. Microsoft; Google)

2.2.3 People to talk to

This and the previous two sections demonstrate shared qualities as they all optimally require aspects of social networking.

No participants specifically mentioned formalised mentor arrangements, but four of the seven participants mentioned that knowing other people they could talk to about digital subjects was an important part of their digital capability development. Contacts included colleagues in the GLAM sector, approachable IT staff, and family members within the GLAM sector and in IT.

Having “someone to point you in the right direction, [so that] then you can keep going” was valuable for Participant A. Other comments from participants were:

“I’ve tried to learn from colleagues who had these types of [digital] skills as much as possible” (D)

“[My parents are] in IT, so I’ve grown up surrounded by that so… I know how to describe stuff even if I don’t know the particulars” (A).

“Get to know the IT people in your organisations… talk to [them] about the [digital] problems you’ve got” (D).

“The hurdle to reach out to the [person in the elite international] organisation is huge… once I got over [that], any other institution hurdle seems small in relation to it” (F).

A common factor was that the participants’ contacts were approachable, as well as being knowledgeable. Participant B’s workplace organised a monthly digital forum open to all employees, which gave participants the opportunity to meet colleagues and “the confidence to talk about digital in a casual way” and to “know who to approach [within the organisation] to explore it a bit further”.

The IT expert in Participant A’s workplace was “really good at communicating, he doesn’t use any jargon or anything” and was proactive in enabling administration permissions that allowed the participant to explore the software package that they later became the workplace expert in. The participant’s relationship with the IT expert was such that “during the learning process… I’d constantly be popping my head through [his door] and [just asking one question] and then he’d just answer that and I could get back [to what I was doing]”.

Creating the opportunity to meet people who might be able to assist with developing digital capability was also discussed. Some participants made acquaintances on Twitter or other social media and followed this up with contacting the person and forming a relationship ‘in real life’. Others went to conferences and met people working on the display stands. Some participants took advantage of networking events run by their professional organisations to meet expert speakers in a

less formal situation, where they could ask them questions during the socialising time after speeches.

Participant A noted that this method of gathering information was most effective when there was a "task to orient you", giving a specific purpose (and an excuse) for approaching people with their questions. Participant F commented that, "If I had known how friendly [my contact] was, I would have [not been so shy and] contacted her much sooner". This participant also noted that although she is now an advocate in the GLAM sector, she "had to work on" developing those skills.

2.2.4 Research on the internet

Beyond using the internet for accessing social media, participants also used it to gather information for solving digital problems. Participant A said that they would do this by searching "How do I do 'specific task'" on Google. Some participants also used online forums and blogs to find answers that addressed their problems, and Participant E said that "all the information you need is out there, you can find that information [and] find answers".

Participant A also noted that for troubleshooting issues with only occasionally-used software, such as Photoshop, searching on Google for a quick answer was their preference. However, for software that they spent more time using, such as their organisation's SharePoint package, it was more worthwhile to invest time in watching online tutorials offered through, for example, Lynda.com. They noted, however, that online tutorials were more difficult to justify using, as they were a more significant investment of time, and that they usually just ended up skipping through the tutorial to get to the specific information that they wanted to find.

Participant E, whose workplace did not support their research at the time, said that when they initially became inspired about developing their digital capability, they "basically spent a year… just doing research at home". When further questioned they said that they weren't "getting paid for any of this… getting home from work, getting on the computer around 10.30 at night, staying up until

two in the morning, getting to work, working on projects at work, knowing just enough to be able to do new stuff at work and then getting home and [doing more research]".

An important factor identified by participants who did internet research was that they already knew enough about the question or problem to ask the right questions for the answers they needed. Participant A noted that when searching for answers to their problems using SharePoint, "it is hard to search for help when you don't even know which version it is [that you are using]!"

2.3 Question three: Digital skills

When asked what they believed important digital skills for the GLAM sector were, participants had a wide range of responses (complete list in Appendix 2: Responses to question three: digital skills). However, skills generally fell into one of two categories: personal attributes (soft skills) and technical skills.

2.3.1 Personal attributes (soft skills)

Five of the seven participants specifically mentioned that an ability to play and experiment with technology and ideas was essential for developing digital capability. Participant A's approach was to "click everything that was clickable and then figure out what it did… and hope I didn't break it – and I did break it sometimes", but that "eventually I learned enough so that when I broke something, I could click on it and figure out how to fix it as well".

No participant said that one must know everything about the digital paradigm to be successful, and Participant G specifically said that the desire to do so could be "very limiting to the ability to solve problems… because this would prevent a person from building relationships [with other people] that could help [the participant] solve problems". Participant C, in a management-level role, said that, "What we are looking for when we recruit, we don't always look for all the skills, it has to do with willingness and openness to learn and a good attitude, enthusiasm and a passion for what we are trying to achieve as an organisation". This was supported by Participant A, in an operational-level

role, who said that in cases where a job was a short-term contract, it was probably preferable to already have the technical skills, but in other situations, “technical skills are less important than the ability to learn, the ability to play with stuff”.

Participant E said that “there is no magic bullet. You just have to get out there and search and be curious”. They also said that “digital is all about… playing with stuff until it breaks, *trying* to break stuff, failing fast, hopefully not making the same mistakes [repeatedly] but having a good time and seeing what the technology can do for you”.

All participants agreed on the importance of networking. Participants advised not to be scared of reaching out to prominent members of the GLAM sector because “they might have a doctorate, they might be in charge of all the nation’s fish specimens, but they put their boots on just like everyone else, and there’s no reason why you can’t email them” (Participant F). Participant G said that “digital capability hinges on relationships. The ability of people to talk to each other and understand problems, and communicate problems and solutions. I think that’s the main enabling component – I don’t think it’s technology”.

The ability to think strategically and rationally about problems was also mentioned by three of the participants – “[Not] mixing up when you are thinking about things conceptually and archivally, versus what the [actual] technology problem is… take control of those [conceptual] aspects and you can work out how technology can solve [those] problems” (Participant D). Participant G said that “the practice of empirical thinking around problem spaces” is important, to avoid “employing belief as a first stop for a solution” – in other words, enquiring whether assumptions about the problem are true, before defining the problem.

Other personal attributes that participants mentioned formed three categories: resilience, problem solving and social networking.

2.3.1.1 Resilience

Resilience was a factor in both problem-solving and in navigating organisational roles. Participant A said that archivists need “an interest or an awareness that you can improve things and you can often improve things reasonably easily” (A) and Participant F said that they coped by “taking the "long game", feeling like work will pay off in the long term, even if it is not recognised now” (F).

Other responses were:

“Not being fixed in your ideas of what kind of job you will end up doing” (C).

“[Don’t] just accept the answers [that IT] give you as the way things have to be done” (D).

“Resilience and being able to manage change” (C).

2.3.1.2 Problem solving

Problem solving required the ability to think rationally about “those big black boxes” that the unknown factors of a problem can at first appear to be (Participant G). Others approached this by “just being open to things and trying to understand them… to be able to say … ‘maybe there’s better ways’” (Participant B).

Aligning digital capability development initiatives with organisational strategic initiatives was also an important factor. When Participant E started his first digital project in his organisation, he said “I wasn’t thinking strategically enough to include the whole organisation in what I was trying to do. If I’d reached out a bit more to people in the organisation I think it would have been a lot easier in the long run for me. You’ve got to take everyone along with the journey – or it’s a journey of one!” (E) and that “you’ve got to have your business case, you’ve got to communicate where you are hoping to go with it, the next steps, that kind of stuff” (E).

Other participants said:

“The ability to jump between big picture stuff and the really detailed thinking and technical jargon” (D).

"Curiosity is really important and I think that's the part that's empowering, rather than knowing the nitty-gritty of [digital technology], that's less important, that's a secondary thing" (G).

2.3.1.3 Social networking

Four of the participants are very active GLAM commentators in social media platforms such as Twitter and Instagram. One of them said that an essential skill in their job was "the ability to build rapport with different types of people, from students to scientists, to enlist a certain sense of credibility" (B).

Participant C said that "[to measure] social good and building capacity for people… to be able to advocate for ourselves… through social media campaigns and using digital tools" was important, as well as community-building qualities such as "manaakitanga[12] and aroha[13], being welcoming of different ideas and of diversity, making space for people to be heard… respect, mutual understanding and empathy".

Other comments were:

"You can just go and talk to people [at workshops], if you don't mind bounding into an area where you don't really know what's going on… just think 'I'll just give it a go and see what happens'" (D).

"Gone are the days in the GLAM sector when you could sit in the back room and not have any interactions with anyone. Even within organisations, our organisations work differently [now] and they expect us to work across teams and work with different people, and collaborate on things, and all those things involve being social" (C).

2.3.2 Technical skills

Six of the seven participants mentioned that being comfortable with digital technology, and having a basic understanding of how it works, was important. Participant B, for example, said that "There's a

[12] Hospitality, care
[13] Compassion, love

certain base level of digital maturity that you need to have before you can even think about doing more stuff and being more efficient in the way that you co-work, co-create [and] collaborate".

Three of the participants said that it wasn't important to know how to write code but just to have an understanding of what it is. Participant A said, "Even if you don't know the specifics. I think that [understanding the basics is] really helpful, both because it means that you're not scared, and it means that you can communicate with the IT department, which I've found [is important] in *all* my jobs, not just GLAM sector jobs".

The ability to translate archival concepts for IT staff and to understand and apply standards and specifications in the evaluation of digital tools was mentioned by Participant C as being important when making decisions around their implementation.

Other responses formed three categories: knowledge of digital principles, awareness of digital technologies and an understanding of systems and standards.

2.3.2.1 Digital principles

Understanding the principles of digital technology enabled participants to be able to describe problems and search out solutions more efficiently as a result of understanding their context. Participant A said they should "know how to describe stuff even if I don't know the particular [details of how something works]" and Participant G said that "if you have a good grasp of the context already, you might have a better appreciation of specialist resources that exist, you might have peers that you can talk with about those issues… I think it all forms organically and follows a traditional enquiry pathway" (G). Participant E said that when solving digital problems, "don't start with the technology [when solving problems], start with the user" (E).

2.3.2.2 Digital technologies

Basic levels of digital capability were described as: "working with [project management] software" (B) and "skill in your organisation's collections system and database" (F). Participant C said that

“[how] we communicate socially now is digitally, and even if it’s just an awareness of… things like Trello… and Slack… that sort of stuff is useful” (C).

“Be up to date with regards to digitisation and protecting the metadata that comes from that” (F).

2.3.2.3 Systems and standards

Participants specifically mentioned:

“Copyright, copyright, copyright and Creative Commons licencing” (F).

“Reading standards and specifications and things like that, or writing good specifications that don’t need to be highly technical… you’re actually trying to describe what you are going to do with the piece of technology: (D).

“Understand the difference between access and re-use” (F).

2.4 Question four: Organisational support

There was a wide range of responses regarding the support that participants would like to see from their organisations – including workplaces and professional associations – for developing their digital capability. At least three participants in this research are active members of their professional associations, but because this information was not actively sought out during interviews, it is unknown exactly how many of the participants this applies to.

There was no obvious difference in responses whether a participant was based in New Zealand or Australia, although the level at which the participant was placed in their organisation, and their length of experience in the GLAM sector appeared to have an influence on their needs. A full list of responses can be found in Appendix 3: Responses to question four: organisational support).

In relation to both professional associations and workplaces, four participants specifically mentioned the need to ‘break down silos’ and encourage communication across professions.

2.4.1 Professional associations

When discussing the support that professional organisations could offer to archivists developing digital capability, responses fell generally into three categories: participation, resources and events.

2.4.1.1 Participation

Participant E, although employed in an archive, identified themselves as belonging in the profession of digital humanities. They had "always been reluctant to become a member of an [archives-type professional association] because I'm not an archivist… I feel like a bit of a cheat". However, they countered this by saying that their archives professional association is moving toward being more inclusive of non-traditional archivists.

Participant D said that professional associations must make sure that "newer professionals have the kind of support they need… [it] tends to get dominated by people who have been around for quite a long period of time, who don't necessarily have a connection with what people coming into the sector want".

"Our associations reflect the members that are most active, and the only way that can change is to get involved" (C).

"Making sure that newer professionals have the kind of support they need… which tends to get dominated by people who have been around for quite a long period of time, who don't necessarily have a connection with what people coming into the sector want" (D).

"Cross-fertilisation [between GLAM professions] needs to happen a lot more" (D).

2.4.1.2 Resources

Participant A said of their professional association said that having resources available such as access to free journal subscriptions and resource lists is useful, but even if they didn't use them often, it is "nice to have them there".

"I was really pleased to see design thinking stuff happening with [my professional association]" (C).

2.4.1.3 Events

A service that professional associations could provide was the facilitation of networking events. These could provide participants with connections to people to talk to about digital subjects – "because I am really introverted… it's nice to know there are people I can ask when I need to" (Participant A).

"The difference in power and resources of GLAM organisations are huge… and [professional associations] need to realise that and make sure they are running events for different people with whole different sets of needs" (D).

"We could have more conference sessions on… stuff where people can walk away with something practical" (D).

"Not just running the same events, talking to the same sets of people over and over again" (D).

2.4.2 Workplaces

Workplaces appear to be a valuable source of digital capability development for members of the GLAM sector. Some of the ways that participants' workplaces supported the development of digital capability are listed below:

- Workforce planning and staff development planning in terms of the organisation's needs around digital skills
- Engaging a staff development team to support staff applying for funding/conferences etc
- Professional development plans having an active component of digital capability development
- Creating a digital 'meta-team' composed of selected members from teams across the organisation who had an interest in digital capability

- IT staff giving full access permissions to staff interested in exploring software packages used by the organisation
- IT giving support and encouragement to staff to explore the functions of the software packages used by the organisation
- Allotting staff time for using social media for networking, information sharing and learning purposes, and encouraging that through endorsing the use of the organisations' hashtags
- Embedding innovation into organisational strategy, thereby creating position descriptions in which research is a required function
- Nurturing a Research and Development environment, in which failure is recognised as an essential part of employees' learning and development
- Organisations recognising staff who are interested in developing their digital capability and moving their roles towards that
- Recognising and being encouraging of staff who are contributing to digital projects, for example by publishing blogs recognising their work

Two participants also mentioned specific organisation-wide digital capability development events. One of these was a monthly group open to all employees, for the discussion of digital subjects, supported by an internal Wiki, with the goal of "enabling water cooler conversations" by "broadening people's digital horizons, with the hope of planting seeds that can develop" (Participant B). The other was a 'digital day' run by the organisation for staff to discover and play with new digital technologies – this organisation also hosts a 'makerspace' which employees are actively encouraged to participate in (Participant C).

When asked about how their workplaces could support them to develop their digital capability, participants' responses generally formed three categories, namely, building trust, integrating 'digital' into the workplace culture, and providing support to develop digital capability. Some responses also reflected how GLAM organisations should interact with the communities they were part of.

2.4.2.1 Building Trust

“In the workplace, if you want your staff to be constantly able to learn, to be up to date, to be able to play with the technology, you have to be able to give them that space”, but “it can be hard to convince a workplace to put those resources into something that doesn’t have an immediate benefit” (A).

“Being supportive of people going out of the office to go and do training” (A).

“To give people enough autonomy over their time that they can choose to spend time learning” (A)

“The trust that [spending time learning] is not a waste of time” (A).

“People should feel supported to interrogate problems and to attack those problems how they need to, to deliver results” (G).

“Googling and Tweeting at work… support staff to go to conferences, publish papers and that sort of stuff, [it] is a show of commitment from the organisation, and you need that” (B).

Being recognised for their capability and supported, Participant A said, “Because I was the one that seemed most interested in learning … I just happened to become the person that knew the most, so then they were like, ‘it makes sense that you would do it because you are already kind of doing it’”.

“People should feel encouraged to deliver results as collective groups, rather than necessarily being individuals operating in isolation” (G).

2.4.2.2 Integrating ‘digital’ into the workplace culture

“[Digital capability] begins at the top leadership level of the organisation… and I think it particularly comes down to the capacity for behaviour modelling… [in] an organisation with a nice digital capability… they start with leadership embodying that it’s important for people to be able to build their skills” (G).

“Social media protocols where people are encouraged to use their social media accounts to share stuff from within the organisation and maybe have a hashtag policy around it… so they can see all the cool stuff happening around it” (B).

“Breaking down silos… enabling different ways for people to communicate about [digital stuff]” (B).

“Getting better at priorities and risks – if people put their backlog as their number one priority then all these issues around electronic recordkeeping ad things around current digital records are just going to slide by and we’re not going to be able to deal with it” (D).

“Start with an honest assessment of where [your organisation] is at [in terms of digital maturity], realistically, to have a benchmark [to] measure against if you want to increase that digital maturity, because that should drive some of the decisions you are making around reporting lines, etc” (B).

“Organisations need to enable sharing of [the stories about digital] and that sort of progress… through intranet, a newsletter, or [events] where the organisation allows people to come together in a casual way – and even put up a few biscuits, provide manaakitanga to get people to come” (B).

“To really drive solid digital transformation throughout, in a strategic way, you need HR in there… it needs to be added to everyone’s professional development goals” (B).

“Executive teams need to have an awareness of what’s going on… Visit all [of your] teams, see what’s happening in staff development, what’s going on and what they need (C).

2.4.2.3 Support

“Keep in mind when you are making digital strategy that everyone is developing digitally, and that strategy needs to be as flexible and as agile as the people that you are expecting to implement those strategies” (B).

“You need someone to point you in the right direction and then you can keep going… also, having a task that orients you is helpful as well” (A).

“The workplace needs to be supportive… you need to enable and drive digital centres of excellence… [by] trying to pick [the people who are already digitally engaged] and… give them the ability to work together [in meta-teams] and become a centre of excellence” (B).

“If you want your staff to have those skills and be prepared for the world that we operate in, you have to resource them” (C).

2.4.2.4 GLAM in the community

“GLAM institutions don’t do enough modelling [to show how digitised content can be used] – people don’t get that you can do this sort of stuff – they’ve got to promote it more” (F).

“Upskill in how to serve [your] communities” (F).

3.0 Discussion

Responses to the first question, about background, demonstrated that participants had diverse pathways into the GLAM sector, leading to employment in a variety of organisations, and a corresponding variety of frameworks on which they developed digital capability in their chosen environments.

Just as the GLAM sector is diverse, so too is the archives profession. Gilliland (2001) illustrates that the information professions, including archivists, have "expanded and diversified in direct relation to the expanded conceptualization of what kinds of information resources and services make up or should make up the digital information environment". Archivists across the profession are also at different levels of familiarity with digital technology. How then are the results of this research applicable across a diversifying profession in which individual experiences and environments may be quite different from one another?

The answer is not to exhaustively identify all the skills that could possibly be required for digital capability so that archivists can 'collect the set'. Rather, the results of this research illustrate that the answer lies in two factors: the ability of archivists to identify the skills that will complement their current skills in order to develop capability; and to move thinking about digital capability from being solely around technical skills, toward an equal attention on soft skills. An archivist's established ability to understand information seeking strategies, for example, is a valuable and transferable skill for digital capability. Many participants talked about the need to have a guiding mission or purpose for their digital capability development, to connect with GLAM members outside of their own profession, and to be driven, self-motivated and organised in their learning. These qualities are also soft skills, which enable the appropriate implementation of technical skills. Museums profession commentator Joan Baldwin (2013) suggests these be rebranded as 'core leadership skills'.

How to develop the skills needed for digital capability? Howard et. al. (2016) discovered that rather than technical skills, the most important skills for contemporary GLAM and records sector members

are “passion for and an understanding of the sector”, indicating that a starting point could be an understanding of the effects of the emergent digital paradigm on the archives profession and wider GLAM sector. Cobb, et. al. (2015) state that the most sought after soft skills – both within the GLAM sector and outside of it – are probably communication and initiative. They posit that for new professionals, an ideal learning ground for soft skills is “involvement in pre-professional organisations” – that learning space straddling the classroom and the workplace. This also applies to archivists more advanced in their careers, who can become active in their professional associations. Online learning resources such as Lynda.com can also provide learning opportunities. Technical skills can be learned, this research has found, from friends and acquaintances, at work, and online.

The technical skills that archivists need for digital capability included familiarity (rather than expertise) with Web 2.0+ technology. This indicates that lists of technical competencies may not fully capture the requisite skills for digital capability if they only focus on technical skills. This research demonstrates that resilience and having the confidence to experiment with technology are just as relevant as an understanding of the principles of coding, for example, for the archivist navigating the GLAM digital environment.

However, this confidence can only be gained in an environment that acknowledges and accepts experimentation – and failure – as an essential part of the learning and development process. Mergel (2016) observes the government sector’s movement towards supporting ‘agile’ environments, and archives organisations could learn from similarly risk-averse organisations when engaging with the challenge of developing resilience in an increasingly dynamic environment. McKinsey’s organisational design principals Aghina and De Smet (2015) point out that agile can be applied to both large and small organisations, with the caveat that there must also be a core of stability – a speciality of the archives sector’s long-term approach.

Participants agreed that technology is most likely to have uptake when it seamlessly integrates into and enriches users’ lives. This suggests that support for developing digital capability needs to be

initiated from the needs of the members and then supported by the executive. Participants suggested that organisations should first consider the needs that need to be met, and then design the solution, rather than looking for out-of-the-box, proprietary solutions to digital problems and making the problem fit into the parameters of the 'solution'.

Consideration must also be given to the needs of an increasingly interconnected environment. Adopting a static, linear approach to developing digital resources (lengthy online tutorials spring to mind) may actually dissuade users who just want to "get to the good bits" that will help to solve their particular digital problem. Connaway et. al.'s 2012 *User-Centred Decision Making* identifies two factors affecting this: that needs would differ for 'residents' of and 'visitors' to Web 2.0+ technology, and that information-seeking behaviours change over time and according to context. This should be taken into account during resource design – including workshops and networking events. An in-depth discussion of the design of resources is beyond the scope of this study, but can be summed up by Connaway, et. al, (2011) – "If it's too inconvenient, I'm not going after it".

Capability development, Jones and Vines (2015) say, "is required across many parts of the department if the [records management system] is to be effective", rather than leaving it only with staff responsible for information management. The same could apply to digital capability within archives organisations – instead of leaving the 'digital stuff' to a siloed digital preservation team, or lone individuals, a meta-team could drive digital capability development throughout the organisation. In a smaller organisation, this could be the responsibility of a 'digital champion' across functions.

The research identified a wide range of means for organisations to support digital capability development, but possibly a more influential factor is the failure of some organisations to adequately support the development of digital capability. This was identified by participants as a significant barrier to change, resulting in staff "being scared" of "breaking" technology, restriction of access to social media, and limitations to the amount of time that employees can spend online, or

away from the office at conferences and networking events. Some workplaces were seen to "lock down" workers to timeframes, or to support environments in which time spent researching is regarded as unproductive. These issues severely limit or even prevent employees from seeking information in a way that adds value to their organisations and supports (even non-digital) strategic initiatives.

Not every suggestion made in this research will be applicable to every archivist. However, it is more than likely possible for readers to identify some aspects that are applicable to their own situation, no matter the size or resourcing of the archives organisation that they belong to, the structure of their professional association, or the environments that their organisations support.

As the archives profession comes to see itself as part of an ecosystem, it could look to other professions in the GLAM sector, and other sectors such as business and education, for guidance in developing digital capability. The archives profession may even be placed to develop a new model of capability that incorporates archival values as outlined in Gilliland's *Enduring Paradigm, New Opportunities* (2000). While Gilliland's article focuses on how the GLAM and records sector would benefit from archival perspectives, this research proposes that there is the possibility for mutual exchange.

The method of data collection employed in this research was chosen to enable a conversation to continue beyond the confines of the interview, into social media, workplaces, between GLAM professions and perhaps even outside of the GLAM sector. It has achieved this by identifying categories (the result headings) as starting points for archivists and their organisations to further explore how digital capability can be developed.

4.0 Conclusions

Because this research area is still in development, the conclusions provide rich opportunities for further investigation into the potential for their implementation.

In addition, there is opportunity for further research exploring concomitant factors in developing digital capability, such as organisational digital maturity, developing social capital, information seeking behaviours, recordkeeping informatics and learning styles as specifically applied to archivists and their organisations in a digital capability development context.

A wide range of both soft and technical skills were named as being important for archivists wishing to pursue digital capability development. Results showed that archivists wanting to develop their digital capability should:

- Start at the level that they are comfortable with:
    - Absolute beginners should consider building confidence with digital technology by using 23 Things for Archivists[14], creating a Twitter account and following some GLAM tweeters, and seeking out virtual or 'in real life' 'digital buddies' for support
    - More advanced beginners should think about participating in conversations on social media, building networks with GLAM members, and planning and implementing a personal digital development project (starting with something simple)
    - Beyond beginners should consider learning coding, initiating projects in their organisations, and mentoring absolute beginners' development
- Investigate networking and development opportunities such as events and conferences outside of their own profession and sector, finding ways to self-fund attendance if necessary
- Consider digital capability development an investment in themselves and their organisations

[14]For example: http://23things4archivists.pbworks.com/w/page/62258667/23%20Things%20for%20Archivists

- Contribute to their professional association's development of digital capability resources and events, or seek their support to develop these if they are not already doing so
- Understand their organisation's strategy and how their digital capability development would contribute to and support that.
- Look outside of their profession and sector for support and ideas

Organisations wanting to support their members' development of digital capability should:

- Consider applying digital maturity models in their organisations
- Make digital capability development part of professional development plans
- Actively support members to engage with developing digital capability
    - Nurture an environment that actively encourages research and networking by allotting time and resources for research and digital capability development
    - Creating a research and development environment integrating design thinking – and developing a 'failspace' policy for experimentation
    - Design resources and events for different levels of digital capability
    - Support employees to go to events across professions and sectors
    - Think outside of the box about what skills are included in digital capability and consider learning styles and personality types when creating resources and events.

Appendices

Appendix 1: Professions of participants

Note: Although there were seven participants, some identified as more than one GLAM profession

Two participants had job titles that included the term ‘digital’
Three participants identified as being at ‘management level’
Three participants identified as digital humanities
One participant identified as museums
One participant identified as galleries
Two participants identified as librarians
One participant identified as citizen scientist
Two participants identified as archivists

Participant A: Archivist and librarian in a successful medium-sized firm of professionals
Participant B: Digital specialist at a large publicly-funded museum
Participant C: Head librarian at a university
Participant D: Digital humanities professional and archivist within a university environment
Participant E: Digital humanities professional at a government archive
Participant F: Volunteer and advocate for digital access and re-use of GLAM data and metadata
Participant G: Digital services at a state/national library

Appendix 2: Responses to question three: digital skills

Note: These responses are summarised for clarity

Building rapport with different types of people
To jump between big picture stuff and the really detailed thinking and technical jargon
Doing ongoing networking
Agile mindset - being able to be open to things and trying to understand them
Hard skills like working with software like Trello, Basecamp, Slack, Office Outlook, Google Drive
Being goal focused
Being organised with information
Attitude that work will pay off in the long term, even if it is not recognised now.
Knowing the value of what you are doing
Understanding the potential future access, use, and reuse, of data and metadata
Copyright and Creative Commons licencing
Understanding the difference between access and re-use
Be skilled in your organisation's collections system and database
Being comfortable with technology in general
Knowing how things basically work, even if you don't know the specifics
A basic level of digital maturity
Interest or awareness that you can change things and often improve things relatively easily
Comfortable playing with technology (rather than being scared of breaking it)
Resilience and being able to manage change
Manaakitanga and aroha - being welcoming of different ideas and diversity, making space for people to be heard, especially around aroha and respect, mutual understanding and empathy
To be able to advocate for the social good and capacity building that GLAM organisations do
Having the mindset that you want to develop your digital capability
Play for play's sake
Being open in terms of sharing knowledge and stories, and in terms of the fact that things are changing and we need to change, otherwise our organisations won't exist
Openness in terms of listening to our communities, we need to listen to what they've got to say
Willingness to learn and a good attitude
Enthusiasm and a passion for what your organisation is trying to achieve
Not being so fixed in your idea of what kind of work you may end up doing
Being systematic with research and keeping notes
Balance - get away from the digital world sometimes because it's so encompassing and intense
See how technology would be applicable for your projects, or how it might benefit your organisation, see the gaps or the opportunities, get inspired about it, go out and learn about it.
Having a passion for digital and learning as much as you can
Take responsibility for being prepared for the world that we operate in, and invest in your development, self-fund if you have to.

Just get out there and search and be curious
Demonstrate that you have all those soft skills and technical skills to go alongside
Being able understand metadata and data
Remembering that everything is being built for the first time by most people
Finding other people who are interested in what you are doing, to feel like you are not alone
Thinking strategically, being inclusive of the whole organisation, reaching out to other people
Get involved with your organisations if you want change
Have a voice and be visible and be seen to be valuable for your skill set.
Awareness that you may transition out of the GLAM sector, but your digital skills are sellable anywhere.
The main enabling component of digital capability development depends on relationships, not technology. Talk to each other and understand problems and develop solutions.
Have your business case prepared, communicate where you are hoping to go with the next steps
Willing to play and find out and discover, being curious
It should be fun and there's a lot of play involved
Don't start with the technology, start with the user
Be open to seeing the unplanned benefits of technologies
Find out and seek the support of people in your workplace that have skills that you can draw on

Appendix 3: Responses to question four: organisational support

Note: These responses are summarised for clarity

A research and development culture
Endorsement of exploration and experimentation
Bring authenticity and build trust by modelling behaviour and embrace digital
Be very clear and give people permission, time and resources for developing digital capability
Include digital capability in professional development programmes, and think outside the box
Incorporate design thinking into training
Executive teams need to have an awareness of the digital environment
Awareness of the diversity of the archives profession and where to pitch things
Invest resources into professional development, prepare people for disruption by providing training, skills and knowledge, and have it built into your own programme.
Think outside the box: consider skills around play and facilitation, design thinking and Agile, change readiness, empathy, etc.
Adopt a multi-channelled, multi-pronged approach to developing capability that is resourced
Ability to keep ahead of the quickly-changing environment – build in resilience and agility
Acknowledgement of the value of time spent conducting environmental scanning on social media platforms and allotment of time to do so
Getting better at priorities and risks as an organisation in a digital environment
Commitment to stay relevant to our audiences as well as thinking long-term
Being supportive of people having time out of the office to go and do training
Identifying how newer professionals are best supported – listening to what they need and resourcing them
Break down professional silos
Learning from other professions in the GLAM and record management sector particularly in the user-facing and the community-facing digital space
Identify what we need to be doing in the broader community and our relevance more broadly
Find out what's happening in other communities particularly in the digital space, and encourage cross-fertilisation from other GLAM professions
Organisations need to be quick on their feet, with a different way of approaching things and thinking about stuff
Offer training opportunities in practical digital skills that archivists can apply to their work
Work on creating a basic level of digital maturity and being more efficient in co-work, co-creation and collaboration
The workplace needs to be supportive, and digital capability development needs to be holistic
Support networking events allowing people to meet in a casual way, and provide basic catering

Enable sharing of stories and progress around digital capability development
Enable and drive digital centres of excellence. Identify people who are already digitally engaged and create working groups of early adopters across teams
Human Resources department need to be engaged with digital capability development projects and development need to be aligned with the whole organisation's professional development goals and actively resourced
Create transparency both inside and outside of the organisation by developing social media policies enabling staff to share stories from within the organisation
Enabling and nurturing different communication channels for staff to chat about digital things.
Conduct doing an honest assessment of your organisation's digital maturity, identify the baseline, measure against it and use it to drive some business decisions
Accept that your organisation is never going to be 100 percent digital, and you probably don't want to be
Keep in mind when you are making digital strategy that some people don't want it. Others need buddies or ways to step them up. Internal and external strategy needs to be as flexible and as agile as the people that you are expecting to implement those strategies
Allow and drive efficiency and agility, ensure that people who are already doing it are supported
Respond to changing behaviours in the workplace and understand that the benchmark for digital technology is the social media that staff use in their daily lives
Resource your staff with space and time for constant learning, to be up to date, to be able to play with the technology
Put resources into projects that don't have an immediate benefit
Make easy access to people that are willing and happy to answer questions and help
Having access to preferred resources for learning and consider how resources are presented.
Give staff enough autonomy over their time that they can choose to spend time learning
Give staff at all levels the trust that learning and development isn't a waste of time
Enable informal networking events that provide an excuse to ask questions to experts
Consider how different learning styles and personality types are engaged with opportunities.
Consider the organisation's capacity for behaviour modelling at the executive level.
The organisation's leadership should embody that it's important for people to be able to build their skills.
Staff should feel encouraged to deliver results as collective groups, rather than necessarily being individuals operating in isolation.
Staff should feel supported to solve problems how they need to
Enable relationships that support the development of digital capability
Become more articulate advocates for what we do and how we deliver value
Model to the community what you are doing and how they can digitally engage
Consider how digital technology can improve inclusivity and engagement
More promotion of digital initiatives and how the community can engage with the organisation

Be aware that if the organisation is engaged with stakeholders via the internet, the world has access to your resources and web 2.0+ removes traditional boundaries.
Make sure that staff are up to date with regards to digitisation and metadata

Appendix 4: Interview Questions

- Briefly describe your background in the GLAM sector, and your current role, with particular attention to the digital aspects of your role/s.
- Please describe your approach to increasing your digital capability over that time.
- Please describe what you think are important skills for archivists engaging with the digital paradigm.
- What support for engaging with the emergent digital paradigm do you see the need for from your organisations (including institutions, workplaces and professional bodies)?

Appendix 5: 'Consent to Interview' form

Developing Digital Capabilities for Archivists

CONSENT TO INTERVIEW

This consent form will be held for two years.

Researcher:
Suzanne Goss, School of Information Management, Victoria University of Wellington

- I have read the Information Sheet and the project has been explained to me. My questions have been answered to my satisfaction. I understand that I can ask further questions at any time.
- I agree to take part in an audio recorded interview.

I understand that:

- I may withdraw from this study at any point before 15 June 2017 without giving any reason, and any information that I have provided will be returned to me or destroyed.
- I may redact or add to information given in the interview up until 15 June 2017 for the purposes of clarifying my responses.
- The information I have provided will be destroyed two years after the research is finished.
- Any information I provide will be kept confidential to the researcher and the supervisor. I understand that the results will be used for a Masters research report and a summary of the results may be used in academic reports and/or presented at conferences.
- My name will not be used in reports, nor will any information that would identify me.
- I would like to receive a copy of the final report and have added my email address below.

Yes	No
☐	☐

Signature of participant: _____

Name of participant: _____

Date: _____

Contact details: _____

Appendix 6: Information sheet

Developing Digital Capabilities for Archivists

INFORMATION SHEET FOR PARTICIPANTS

Thank you for your interest in this project. Please read this information before deciding whether or not to take part. If you decide to participate, thank you. If you decide not to take part, thank you for considering my request.

Who am I?

My name is Suzanne Goss and I am a Masters student in Information Studies at Victoria University of Wellington. This research project is work towards my research report.

What is the aim of the project?

This project aims to explore how archivists can develop their digital capabilities by drawing on similar experiences of archivists and other members of the wider GLAM sector.
This research has been approved by the Information Studies Human Ethics Committee of the Victoria University of Wellington (reference number #24531).

How can you help?

If you agree to take part I will interview you either via Skype or in person at a time and location agreed upon by you. I will ask you questions about your experiences. The interview will take 30 minutes to an hour. With your permission, I will record the interview and write it up later. You can stop the interview at any time, without giving a reason. You can withdraw from the study by contacting me at any point before 15 June 2017. If you withdraw, the information you provided will be destroyed or returned to you.

What will happen to the information you give?

This research is confidential. This means that the researchers named below will be aware of your identity but the research data will be aggregated and your identity will not be disclosed in any reports, presentations, or public documentation. However, you should be aware that in small projects your identity might be obvious to others in your community.

Only my supervisors and I will read the notes or transcript of the interview. The interview transcripts, summaries and any recordings will be kept securely and destroyed two years after the research ends.

What will the project produce?

The information from my research will be used in my Masters research report, which will be deposited in the University Library.

If you accept this invitation, what are your rights as a research participant?

You do not have to accept this invitation if you don't want to. If you do decide to participate, you have the right to:

- choose not to answer any question;
- ask for the recorder to be turned off at any time during the interview;
- withdraw from the study before 15 June 2017;
- ask any questions about the study at any time;
- receive a copy of your interview recording (if it is recorded);
- read over and comment on a transcript of your interview;
- agree on another name for me to use rather than your real name;
- be able to read any reports of this research by emailing the researcher to request a copy.

If you have any questions or problems, who can you contact?

If you have any questions, either now or in the future, please feel free to contact either:

Student:	**Supervisor:**
xxxx	xxxx

Human Ethics Committee information

If you have any concerns about the ethical conduct of the research you may contact the Victoria University HEC Convener: Associate Professor Susan Corbett.
Email susan.corbett@vuw.ac.nz or telephone +64-4-463 5480.

References

Adams Becker, S., Cummins, M., Davis, A., Freeman, A., Giesinger Hall, C., Ananthanarayanan, V., Langley, K., and Wolfson, N. (2017). NMC Horizon Report: 2017 Library Edition. The New Media Consortium. http://www.nmc.org/publication/nmc-horizon-report-2017-library-edition/ Retrieved 01 July 2017.

Aghina, W. and De Smet, A. (2015). *The Keys to Organisational Stability.* http://www.mckinsey.com/business-functions/organization/our-insights/the-keys-to-organizational-agility Retrieved 05 July 2017

Baldwin, J. (2015) Why are soft skills soft? *Leadership Matters.* https://leadershipmatters1213.wordpress.com/tag/soft-skills/ Retrieved 05 July 2017.

Beetham, H. and Sharpe, R. (2010). *Literacies Development Framework.* http://jiscdesignstudio.pbworks.com/w/file/40474958/Literacies%20development%20framework.doc Retrieved 02 July 2017.

Beetham, H. (2015). *Deepening Digital Knowhow: Building Digital Talent.* Jisc. https://digitalcapability.jiscinvolve.org/wp/files/2015/08/5.-Report.pdf Retrieved 11 September 2016

Beetham, H., Killen, C., and Knight, S. (2017). *Developing Organisational Approaches to Digital Capability*. Jisc. https://www.jisc.ac.uk/guides/developing-organisational-approaches-to-digital-capability Retrieved 27 June 2017

Catlin, T., Scanlan, J., & Willmott, P. (2015). *Raising your digital quotient.* McKinsey. http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/raising-your-digital-quotient Retrieved 16 October 2016

CILIP. (2013). *Professional knowledge and skills base.* http://www.cilip.org.uk/careers/professional-knowledge-skills-base/what-professional-knowledge-skills-base Retrieved 19 January 2017

Cobb, E.J., Meixelsperger, J., and Seitz, K.K. (2015) Beyond the classroom: fostering soft skills in pre-professional LIS organisations. *Journal of Library Administration.* 2015:55 114-120. DOI: 10.1080/01930826.2014.995550 Retrieved 06 July 2017.

Connaway, L.S., Dickey, T.J., and Radford, M. (2011). If it's too inconvenient, I'm not going after it: Convenience as a critical factor in information-seeking behaviours. *Library and Information Science Research.* 2011:33. 179-190

Connaway, L.S., Hood, E., Lanclos, D., White, D., Le Cornu, A. (2012). User centred decision making: A new model for developing academic library services and systems. *International Federation of Library Associations and Institutions (IFLA).* 39:1, 20-29. DOI: 10.1177/0340035212472462 Retrieved 02 July 2017.

Cook, T. (1997). What is past is prologue: A history of archival ideas since 1898 and the future paradigm shift. *Archivaria.* 43: Spring, 17-63. Association of Canadian Archivists. http://archivaria.ca/index.php/archivaria/article/view/12175/13184 Retrieved 11 September 2016

Davies, S. (2015). Building capability for new digital leadership, pedagogy and efficiency: Spotlight on digital capabilities. *Jisc Digital Capability Co-design Challenge Blog.* https://digitalcapability.jiscinvolve.org/wp/page/4/ Retrieved 11 September 2016

Duranti, L. (2001). The impact of digital technology on archival science. *Archival Science* 2001:1, 39-55. Kluwer.

Gilliland, A. (2000). Enduring Paradigm, New Opportunities: The Value of the Archival Perspective in the Digital Environment. in Michèle V. Cloonan, ed. *The Heritage of Preservation* http://dianaascher.com/enduring-paradigm-new-opportunities-gilliland/ Retrieved 02 July 2017.

Gilliland, A. (2014). Chapter 8: Emergent and related areas of research. *Conceptualising 21st Century Archives*. Society of American Archivists**.**

Howard, K, Partridge, H, Hughes H, and Oliver, G. (2016). Passion trumps pay: a study of the future skills requirements of information professionals in galleries, libraries, archives and museums in Australia. *Information Research.* 21:2. http://www.informationr.net/ir/21-2/paper714.html#.WVhxs-lLc9e Retrieved 202 July 2017.

Jones, M and Vines, R. (2016). Cultivating digital capability. *Records Management Journal* 26:3, 242-258. http://www.emeraldinsight.com/doi/abs/10.1108/RMJ-11-2015-0035 Retrieved 02 July 2017.

Leedy, P.D. and Ormond, J.E. (2013). Chapter 6: Qualitative research. *Practical Research Planning and Design.* Tenth edition, Pearson.

MacNeil, H. (1994). Archival theory and practice: Between two paradigms. *Archivaria* 37:Spring, 6-20. Association of Canadian Archivists. http://archivaria.ca/index.php/archivaria/article/view/11982 Retrieved 11 September 2016

Mergel, I. (2016). Agile innovation management in government: A research agenda. *Government Information Quarterly.* 2016:33, 516-523. https://doi.org/10.1016/j.giq.2016.07.004 Retrieved 05 July 2017.

NAA. (2017). *Digital information and records management capability matrix.* http://www.naa.gov.au/information-management/support/qualifications/capabilities-matrix/index.aspx Retrieved 19 January 2017

OCLC, (2009). *Competency Index for the Library Field.* Compiled by WebJunction. http://www.webjunction.org/content/dam/WebJunction/Documents/webjunction/Competency%20Index%20for%20Library%20Field.pdf Retrieved 27 June 2017

Oliver, G. (2011). *Organisational Culture for Information Managers.* Elsevier Science.

Pickard, A.J. (2013). *Research Methods in Information.* Second edition. Facet Publishing.

Palmer, J. and Stevenson, J. (2011). Something Worth Sitting Still For?: Some Implications of Web 2.0 for Outreach. In *A Different Kind of Web,* ed. Kate Theimer. Society of American Archivists.

Pearce-Moses, R. and Davis, S. (2008). (eds.) *New Skills for a Digital Era*. Society of American Archivists. http://www.archivists.org/publications/proceedings/NewSkillsForADigitalEra.pdf Retrieved 11 September 2016.

Taylor, H. (1987). Transformation in the Archives: Technological Adjustment or Paradigm Shift? *Archivaria* 25:Winter, 12-28. Association of Canadian Archivists.

Theimer, K. (2011) *A different kind of web: New connections between archives and our users*. Society of American Archivists.

Theimer, K. (2012) Honest tips for wannabe archivists out there. *ArchivesNext* 25 June 2012. http://archivesnext.com/?p=2849 Retrieved 26 June 2017.

White, M.D. and Marsh, E.E. (2006). Content analysis: A flexible methodology. *Library Trends* Summer 2006. 55:1 22-45.

Williamson, K, Given, L and Scifleet, P. (2013) Chapter 19: Qualitative data analysis in Williamson, K., & Johanson, G. eds. *Research methods: information, systems and contexts*. Prahran, Victoria: Tilde Publishing.

Wright, J. (2012). Some archival career advice. *The Bigger Picture: Exploring Archives and Smithsonian History.* 26 April 2012. https://siarchives.si.edu/blog/some-archival-career-advice Retrieved 26 June 2017.

Suzanne Goss 300317750

Word Count: 11 650 excluding headings, appendices, abstract and contents.