Library and information science education 2.0: guiding principles and models of best practice

ALTC Fellowship Report

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Access to Fellowship materials is available via

The program blog – <http://liseduation.wordpress.com>

This blog was established to be the primary dissemination and promotion tool during the life of the fellowship. It was also being used to assist with data collection as members of the library and information science industry were invited to contribute to the blog's content. Whilst no longer active the blog will remain active to be a record' of the fellowship journey.

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Executive summary

This ALTC Teaching Fellowship aimed to establish *Guiding Principles for Library and Information Science Education 2.0.* The aim was achieved by (i) identifying the current and anticipated skills and knowledge required by successful library and information science (LIS) professionals in the age of web 2.0 (and beyond), (ii) establishing the current state of LIS education in Australia in supporting the development of librarian 2.0, and in doing so, identify models of best practice.

The fellowship has contributed to curriculum renewal in the LIS profession. It has helped to ensure that LIS education in Australia continues to meet the changing skills and knowledge requirements of the profession it supports. It has also provided a vehicle through which LIS professionals and LIS educators may find opportunities for greater collaboration and more open communication. This will help bridge the gap between LIS theory and practice and will foster more authentic engagement between LIS education and other parts of the LIS industry in the education of the next generation of professionals. Through this fellowship the LIS discipline has become a role model for other disciplines who will be facing similar issues in the coming years.

Eighty-one members of the Australian LIS profession participated in a series of focus groups exploring the current and anticipated skills and knowledge needed by the LIS professional in the web 2.0 world and beyond. Whilst each focus group tended to draw on specific themes of interest to that particular group of people, there was a great deal of common ground. Eight key themes emerged: technology, learning and education, research or evidence-based practice, communication, collaboration and team work, user focus, business savvy and personal traits.

It was acknowledged that the need for successful LIS professionals to possess transferable skills and interpersonal attributes was not new. It was noted however that the speed with which things are changing in the web 2.0 world was having a significant impact and that this faster pace is placing a new and unexpected emphasis on the transferable skills and knowledge. It was also acknowledged that all librarians need to possess these skills, knowledge and attributes and not just the one or two role models who lead the way.

The most interesting finding however was that web 2.0, library 2.0 and librarian 2.0 represented a 'watershed' for the LIS profession. Almost all the focus groups spoke about how they are seeing and experiencing a culture change in the profession. Librarian 2.0 requires a 'different mindset or attitude'. The Levels of Perspective model by Daniel Kim provides one lens by which to view this finding. The focus group findings suggest that we are witnessing a re-awaking of the Australian LIS profession as it begins to move towards the higher levels of Kim's model (ie mental models, vision).

Thirty-six LIS educators participated in telephone interviews aimed at exploring the current state of LIS education in supporting the development of librarian 2.0. Skills and knowledge of LIS professionals in a web 2.0 world that were identified and discussed by the LIS educators mirrored those highlighted in the focus group discussions with LIS professionals. Similarly it was noted that librarian 2.0 needed a focus less on skills and knowledge and more on attitude. However, whilst LIS professionals felt that there was a paradigm shift within the profession. LIS educators did not speak with one voice on this matter with quite a number of the educators suggesting that this might be 'overstating it a bit'. This study provides evidence for "disparate viewpoints" (Hallam, 2007) between LIS educators and LIS professionals that can have a significant implications for the future of not just LIS professional education specifically but for the profession generally.

Inviting the LIS academics to discuss how their teaching and learning activities support the development of librarian 2.0 was a core part of the interviews conducted. The strategies used and the challenges faced by LIS educators in developing their teaching and learning approaches to support the formation of librarian 2.0 are identified and discussed. A core part of the fellowship was the identification of best practice examples on how LIS educators were developing librarian 2.0. Twelve best practice examples were identified. Each educator was recorded discussing his or her approach to teaching and learning. Videos of these interviews are available via the Fellowship blog at <http://liseduation.wordpress.com>.The LIS educators involved in making the videos felt uncomfortable with the term 'best practice'. Many acknowledged that there simply seeking to do the best by their students and that there was always room for improvement. For this reason these videos are offered as examples of "great practice". The videos are a tool for other educators to use, regardless of discipline, in developing their teaching and learning approaches to supporting web 2.0 professionals.

It has been argued that the main purpose of professional education is transformation (Dall' Alba, 2009; Dall'Alba & Barnacle, 2007). As such professional education should focus not just on skills and knowledge acquisition but also on helping students to develop ways of *being* the professionals in question (ie LIS professionals, teachers, lawyers, engineers).The aim of this fellowship was to establish *Guidelines for Library and Information Science Education 2.0* it has however become apparent that at this point in time it is not yet possible to fulfil this aim. The fellowship has clearly identified skills and knowledge needed by the LIS professional in web 2.0 world (and beyond). It has also identified examples of 'great practice' by LIS educators as they endeavour to develop LIS professionals who will be successful in a web 20 world. The fellowship however has also shown that the LIS profession is currently undergoing significant attitudinal and conceptual change. Consequently, before a philosophy of LIS education 2.0 can be expressed, the Australian LIS profession must first explore and articulate what it means to *be* an LIS professional in the 21st century (ie a world of web 2.0 and beyond). In short, the LIS profession in Australia must take stock not of "what we know and can do" but on "who we are becoming" (Dall'Alba, 2009, p 34).

1.0   Educational issue being addressed

In 2005, Professions Australia noted that the nation was "facing a major skills challenge across a number of professional occupations" (p 5). They observed that new technologies were resulting in significant transformation in the contemporary workforce. This transformation is impacting on the nature of skills required for occupational success. They concluded that the "skill set required in the workplace will continue to change and expand" (p. 5), and that consequently the "current approaches to professional skills development may be inadequate" (p. 5). This fellowship considered the "changing skills requirements" for "occupational success" within the library and information science (LIS) sector. The fellowship was a disciplinary based program that will have interdisciplinary influence and impact. The LIS discipline, like other disciplines, is in transition amongst cultural, social, economic and, especially, technological changes. The impact of web 2.0[1] in particular has seen constant change to the way libraries function and the roles and expectations of LIS professionals.

2.0   Fellowship objectives

The aim of this Fellowship was to establish *Guiding Principles for Library and Information Science Education 2.0*. This aim was achieved by (i) identifying the current and anticipated skills and knowledge required by successful LIS professionals in the age of web 2.0 (and beyond), (ii) establishing the current state of LIS education in Australia in supporting the development of librarian 2.0, and in doing so, identify models of best practice.

3.0   Fellowship outcomes and deliverables

This fellowship was designed to:
- identify the skills and knowledge required by LIS professionals in the web 2.0 age
- establish a profile of current Australian LIS education in terms of its ability to develop "LIS web 2.0 professionals"
- produce *Guiding Principles for Library and information Science Education 2.0* that can be used by LIS educators in curriculum design
- foster the interest and engagement of all stakeholders (ie employers, practitioners, professional associations) in LIS education
- enhance the profile of LIS profession and education as a leading discipline in higher education best practice
- establish the LIS discipline as a role model for other disciplines who will face similar issues.

4.0   Significance of fellowship program

In recent years much has been written on the development and changes necessary in LIS education if it is to remain dynamic and responsive to the evolving information age and to ever-changing marketplace demands. Michael Gorman, President of the American Library Association in 2005-2006, declared that there is a "crisis in LIS education" (2004,

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[1] Web 2.0 was a term introduced in 2004 by Tim O'Reilly that refers to the second generation of the world wide web that allows greater degree of participation, individualisation, collaboration and co-creation. Web 2.0 includes things such as wikis, social networking spaces and blogs/micro-blogging.

p. 376). In Australia, Harvey (2004) asserted that "something's amiss with university-based education for librarianship"(p.151). Similarly, Myburgh (2003) argued that a "fresh approach needs to be taken considering the education and development of the new information professional" (p. 214). She challenged library educators to provide "the necessary skills with which [students] can gain employment upon graduation, as well as the vision and understating which might help them cope better with the rapidly changing world in which [they] live" (p. 214). A sentiment also shared by Wagner who indicated that the future of LIS education will be determined by examining "what skills will be required by library information professional to enable them to adapt to new and changing demands in society" (p. 128).

Whilst this may seem a relatively straightforward challenge, Harvey and Higgins point out that as the profession is complex and ever changing generally it does "not speak with one voice about the attributes and skills it expects new graduates to have" (p. 154). Consequently "LIS educators often feel that they are walking a tight rope as they attempt to accommodate the demands of the profession with their own perceptions of what content is needed in the curriculum". More recently Hallam (2007) observed that "these are indeed challenging times for [LIS] educators" (p. 1) noting that the "disparate viewpoints that exist between LIS educators and LIS professionals" is perhaps the most significant barrier for the profession to overcome. Many in the profession suggest that LIS professionals and LIS educators inhabit two different worlds, with insufficient interplay and interaction between them. Moran (2001) noted that's "many librarians have little firsthand experience with library education after they graduate" (p. 55). Likewise, Hallam (2007) suggests that LIS educators can "be totally out of touch with current industry practice" (p. 10).

This fellowship will contribute to curriculum renewal in the LIS profession. It seeks to ensure that LIS education in Australia continues to meet the changing skills and knowledge requirements of the profession it supports. It also seeks to provide a vehicle through which LIS professionals and LIS educators may find opportunities for greater collaboration and more open communication. This will help bridge the gap between LIS theory and practice and will foster more authentic engagement between LIS education and other parts of the LIS industry in the education of the next generation of professionals. Through this fellowship the LIS discipline will become a role model for other disciplines who will be facing similar issues in the coming years.

5.0 Using and advancing existing knowledge

This fellowship program builds upon the existing work exploring the impact web 2.0 is having on the skills and knowledge of LIS professionals. A brief review of this work is provided here.

Library 2.0 refers to the application of web 2.0 technology to the design and delivery of LIS services. Christine Mackenzie (2007), Manager of the Yarra Plenty Public Library Service, suggests that library 2.0 has forever changed the "library brand" (p. 120). Libraries are no longer about books or even information. Instead, libraries are about "facilitating people to participate, interact and create, to provide the means for that to happen" (p. 120). Similarly, US LIS educator, Michael Stephens, noted that library 2.0 is breaking down the barriers – "barriers librarians have placed on service, barriers of place and time, and barriers inherent in what we do" (Stephens & Collins, 2007, p. 254).

In the last few years there has been extensive discussion and heated debate exploring library 2.0 in journals, conferences and most notably the "biblioblogosphere" (blogs

written by LIS professionals). Much of this discussion has focused on developing a clearer understanding of what library 2.0 actually is. However, the discussion has also included an acknowledgement that regardless of how library 2.0 is ultimately understood, it will require a new type of LIS professional. It needs an LIS professional that is "better equipped and broadly educated than one just ten years ago" (Feng, n.d., p. 1). Enter *Librarian 2.0* (Abram, 2005).

In the last five years blogging librarians have begun to compile their vision for librarian 2.0. In 2005, Abram declared that "librarian 2.0 is the guru of the information age" (p. 46). He observed that the web 2.0 movement was laying the groundwork for exponential growth and was having a dramatic impact on the way people live, work and play. In his view librarian 2.0 has the "ability, insight and knowledge to influence the creation of this new dynamic – and guarantee the future of our profession" (p. 46).

One of the first attempts to catalogue the core competencies of librarian 2.0 was provided by Stephens (2006). Librarian 2.0 plans for users, embraces web 2.0 tools, controls technolust, makes good, yet fast decisions, is a trendspotter and gets content. He concluded by noting that librarian 2.0 "never stops dreaming about the best library service" (Stephens, 2006, para. 9). Similarly, Cohen's (2006) much cited work 'The Librarian's 2.0 Manifesto' outlines 17 statements that should guide the professional practice of librarian 2.0. Like Stephens, Cohen's focuses not on specific IT skills and knowledge but on the attitude or ethos that a successful librarian in the 2.0 world must possess, for example, 'I will be willing to go where users are' or 'I will take an experimental approach to change and be willing to make mistakes'.

LIS professionals around the world have begun to develop lists of core competencies for librarian 2.0 that are tailored to their unique contexts. These lists have tended to focus more on interpersonal skills and less on technological competencies. Peltier-Davis (2009), a cataloguing librarian identified a 14 point checklist for librarian 2.0 that included items such as have the capacity to learn constantly and quickly, have the propensity to take risks and work under pressure, be skilful at enabling and fostering change, have a sense of humour and become an advocate for the profession. Saint-Onge (2009) identified a list of 'must-have' features for law-librarian 2.0, including possessing big picture skills, establishing a closer connection to information and not the library per se, embracing the role of teacher, adopting a marketing approach to service design and delivery and having the confidence to take up the challenge and embrace the future. Harvey (2009) noted that science librarian 2.0 should be willing to experiment with new technologies but should also retain a healthy dose of skepticism. Science librarian 2.0 should avoid throwing out old methods and tools and instead be prepared to combine the old with the new. They will do whatever they can to reach library users whilst also having fun in the process.

King (2007) moved the focus from attitudinal qualities to IT skill and knowledge and identified a list of over a dozen basic IT competencies of librarian 2.0. This included being able to write and post to a blog, create, upload and edit photos, short videos, podcasts and screen casts, edit an avatar's appearance and, know how to pick up a new device and figure out how to use it. He also identified large-scale skills that include understanding how the basic IT competences work within a library setting, and how they complement a physical, traditional library. Most importantly, King felt that librarian 2.0 must be able to tell the library's story, through various media - writing, photography, audio, and video. When asked to include understanding of Creative Commons to his list of basic competencies, King replied: "I'm not adding it to my 2.0 Librarian list. Instead, I think EVERY librarian, 2.0 or not, should understand Creative Commons, just like every

librarian should understand the basics of Copyright" (para. 4). This raises the question of whether every librarian should be a 2.0 librarian?

The role and influence librarian 2.0 can and should have within their organisation was explored by Cullen (2008) who argued that librarian 2.0 does not work or think of their role at the level of the library or information service, "they work at the organisational level and challenge assumptions about what the business thinks it knows" (p. 256). Librarian 2.0 creates value for every individual in the organisation and they become "a critical organisational resource whose influence transcends departmental silos and professional boundaries, and can catalyse management innovation throughout the business" (p. 257).

The LIS profession is quickly recognising that library 2.0 requires an LIS professional "that is better equipped and broadly educated than one just ten years ago" (Feng, n.d. p. 1). The call to the LIS profession is becoming clear: "it is essential that we start preparing to become Librarian 2.0 now" (Abram, 2005, p. 46). At the 2007 conference of the International Federation of Library and Information Association (IFLA) Saw and Todd noted that "library 3.0 is just around the corner and even though we don't know exactly what from library 3.0 will take we do know that it will deliver a new generation of library products and services" (p. 2). They challenge the LIS industry to "ensure that library staff – current and future – workforce possess the necessary skills to work in library 3.0 successfully" (p. 2).

This challenge has been taken up in various informal ways within the LIS profession, one of the most notable examples is the '23 Things' program developed by the staff at the Public Library of Charlotte and Mecklenburg County in the United States in August 2006. The program was developed to help library workers to learn about web 2.0 through play. The current state of formal LIS education was commented on by Jenny Macaulay, in her 'Life As I know It' blog: "in my time in library school so far we haven't talked about web 2.0 or about library 2.0 in any specific capacity. We have used some web 2.0 technologies. I can't say that the faculty know about these technologies or not" (2007, para. 9).

Beyond the informal blog discussions, no systematic study has taken place to identify the skills and knowledge required by librarian 2.0 so they may successfully provide library 2.0. In addition no work has considered to what extent existing LIS education is providing the industry it supports, with professionals possessing the skills and knowledge the rapidly changing industry requires. In short, three observations can be made: (i) library 2.0 has changed the way that libraries and LIS professionals do business; (ii) the skills and knowledge required by the LIS professional for success in the age of web 2.0 has changed; and (iii) the learning experiences of LIS students continues to be framed in disciplinary traditions that do not reflect the needs of contemporary work environments. This fellowship addressed these observations.

6.0   Description of approach and methodology

The fellowship program's aim was to establish Guiding Principles for Library and Information Science Education 2.0. This aim was achieved by (i) identifying the current and anticipated skills and knowledge required by successful LIS professionals in the age of web 2.0 (and beyond); and (ii) establishing the current state of LIS education in Australia in supporting the development of librarian 2.0, and in doing so, identify models of best practice. This section will describe the approach and methodology in achieving the two aspects of the fellowship Program.

6.1 Skills and knowledge required by librarian 2.0

The aim of this part of the fellowship program was to identify the current and anticipated skills and knowledge required by successful LIS professionals in the age of web 2.0 (and beyond).

6.1.1 Focus groups

Focus groups were used for data collection as they allow for the gathering of qualitative data through "carefully planned discussion designed to obtain perceptions on a defined area of interest in a permissive, non-threatening environment" (Krueger, 1994, p. 6). Krueger (1994) noted that focus groups are effective because they tap into the human tendency to develop attitudes and perceptions by interaction with people and that "people may need to listen to opinions of others before they form their own personal viewpoints" (p. 11). Focus groups are an appropriate choice for the current study because of their ability to produce concentrated amounts of data on a specific topic and because groups allow the researcher to "obtain deeper levels of meaning, make important connections, and identify subtle nuances in expression and meaning" (Stewart and Shamdasani, 1990, p. 16). All of the above, however, must be viewed in light of the inherent limitations associated with the focus group technique, including the small number of respondents that participate, the limitations on generalisability to a larger population, and the bias of the researchers' influence and interests. Every effort was made in the current study to strengthen the advantages and to limit the disadvantages of the focus group technique.

6.1.2 Participants

Stewart and Shamdasani (1990) observed that the selection and recruitment of participants is one of the more critical tasks when using the focus group technique. They noted that the "individuals who are invited to participate in a focus group must be able and willing to provide the desired information and must be representative of the population of interest" (p. 51). As this is a study exploring the understandings and perceptions of LIS practitioners in regard to the skills and knowledge of librarian 2.0, it was important that the participants had diverse and rich experiences within the broad LIS field. This would help to reveal the range of views and experiences that exist about librarian 2.0. Participants for the current research project were drawn from: public (including state and national), academic, school, government and special libraries, LIS education and LIS employment services. They came from different areas of Australia and were employed in a variety of roles, from new librarians through to senior managers.

Following the advice of Krueger and Casey (2000) the current study sought to have six to eight participants in each focus group. This would help the facilitator to have control over the discussion, but at the same time allow participants to share their views and make their observations. Thirty possible focus group session times were identified and interested LIS professionals were asked to indicate their availability via an online scheduling tool (http://www.doodle.com). This resulted in 14 focus group times being established. Assuming a 20 per cent "no show rate", up to 10 people were allocated to each focus group session. This resulted in each focus group having between three and nine participants.

A combined convenience and purposive sampling approach was selected as the most effective option for recruiting study participants. Personalised e-mails were sent to the managers of large libraries inviting involvement in the study by their staff. E-mails were sent to the LIS professions' e-lists. Eighty-one subjects participated in the study. A breakdown of the participant profile can be found in Table 1. The participants' industry

experience ranged from four months to 40 years, with an average of 17.09 years spent within the sector. Participants' ages ranged from 24 to 66 years, with an average age of 44.8. Reflecting the current female domination of the LIS profession, the balance of participants was skewed to the female gender, with only nine males participating in the focus groups. All library sectors were represented in the sample; however, the public and academic library context dominated. Although teleconferences were used to encourage regional involvement in the study only 28.40 per cent (or 23 of the 81) of the participants identified themselves as being located in a regional area.

Total	81			
Gender	Female:	72	Male:	9
Age	Range:	24-66 years	Average:	44.8 years
Time in industry:	Range:	4 months–40 years	Average:	17.09 years
Employment status:	Full time:	70	Part time:	8
	Contract:	2	Casual:	1
Location:	Regional:	23	Metropolitan:	58
Sector:	Public/state/national	24	LIS education:	5
	School:	6	LIS supplier:	1
	Academic:	33	LIS employment:	1
	TAFE:	3	Special:	8

Table 1 Participant Profile (focus groups)

6.1.3   Data collection

The focus groups were conducted in February and March, 2009. Eight sessions were face-to-face and six sessions were conducted via teleconference. All sessions were audio recorded. Traditional focus groups involve a semi-structured group discussion, involving face to face interaction among multiple participants guided by a facilitator. In the teleconference focus group, a moderated group discussion similar to a conference call is conducted, allowing the participants and the facilitator to be situated in various physical locations (Cooper, Jorgensen and Merritt, 2003). While using telephone for conducting focus groups is a relatively new approach in research (Hurworth, 2004), it has been noted that teleconference and the face to face focus group approaches are very similar and that the primary difference between the two is the lack of nonverbal cues in the teleconference format (Tolhurst and Dean, 2004). The teleconference approach was included in the current study as it allowed participants to be included from geographically remote locations. Given the focus of the study this was an important dimension to include within the research design.

The general aim of the focus group sessions was to develop a greater understanding of the current and anticipated skills, knowledge and attributes of librarian 2.0. The focus group sessions were conducted by two members of the team (the Fellow and a Research Assistant). To control for the variation of having two researchers administering the sessions; the research team established a shared philosophy and approach to the running of the session. This included the creation of a discussion guide to structure content and flow. The focus group facilitator was responsible for ensuring the sessions

ran smoothly and that all key points were covered. They were also responsible for ensuring that a permissive, non-threatening environment was created, "by not making judgements about responses or communicating approval or disapproval through body language, and through encouraging alternative explanations" (Williamson, 2002, p. 256). The emphasis in the focus group is on the interaction among the group members, with the facilitator blending quietly into the background. Except for posing questions and occasionally making necessary comments to ensure the group's engagement, the focus group facilitator should be a listener and a learner (Morgan, 1993). The following open-ended questions were used to stimulate discussion:

- What is library 2.0?
- What are the skills and knowledge required by librarian 2.0 in library 2.0 (and beyond)?
- You are about to appoint a new librarian to lead the charge in making your library into library 2.0. What are the essential and desirable traits, skills and knowledge you would include in the position description?
- Is it a fad? (ie library 2.0?, librarian 2.0?)
- To what extent are the skills and knowledge of librarian 2.0 representing a new and different type of skill and knowledge set? Haven't we always had these?

Unstructured, follow-up probes were used to further explore points as they arose during the session. In addition, to stimulate the discussion, a handout was provided that outlined the key findings and reflections about librarian 2.0 from the current literature. The handout was developed by examining the current published scholarly writings within the LIS field, as well as the more informal discourse found via blogs, wikis and the like. The handout was provided at the start of the face to face focus group sessions and was emailed to the participants of the teleconference focus groups in advance of the session. The sessions ended with the participants being invited to provide any comments that they would like raise about librarian 2.0 but have not had the opportunity to do so during the session.

This study adopted a Popperian position of explaining rather than defining terms (Popper, 1966). That is, the study adopted the perspective that the labels attached to concepts do not matter; the concepts themselves and their significance for practice do. In short, semantics, and especially disagreement over terms, should not be a restriction to understanding. Thus, for ease of communication, the current research used the term 'librarian 2.0' in referring to the concept being explored. The authors acknowledge that 'librarian 2.0' is not an ideal label, and that it will (and should) fade away into non-use, but for the context of the current study it provided a convenient vehicle for communicating and exploring a specific concept (the LIS professional in a world of rapidly changing emerging technologies).

6.1.4 Data analysis

The most challenging part of any research study is the analysis of the data obtained (Morgan, 1993). Given the qualitative nature of the data gathered by focus groups, Morgan (1993) noted that a "considerable amount of subjective judgment is necessarily involved in their interpretation and analysis" (p. 43). But he also acknowledged that with "proper scrutiny and interpretation, the information, perceptions, opinions and attitudes expressed by focus group participants can yield valuable insights not available from other sources" (p. 43-44).

The main purpose of the focus groups conducted in the current study was to provide an in-depth exploration of a topic about which little is known. Analysis therefore concentrated on exploring the content of the sessions by identifying the key points and

themes of discussion. Lisosseliti (2003) recommends that the focus group analysis should consider issues, ideas and themes in the participants' comments, inconsistent or contradictory comments and shifts in opinion, vague comments versus specific responses, tone and intensity of comments, frequency and intensity of an idea and the balance of positive and negative comments about an issue or idea. Because the identification and exploration of ideas and themes depends on the researcher's classification of the data, a manual data analysis approach was used (ie software such as Nvivo cannot do this form of analysis appropriately).

The data analysis process undertaken in the current study was an iterative one, constantly grounded in the focus group data. The Fellow spent time listening to the audio recordings and reviewing the transcripts. The Fellow was seeking to identify the emerging themes and to determine the similarities, differences and potential connections among keywords, phrases and concepts within and among each focus group.

In recent years a number of researchers have begun to acknowledge that focus group analysis must also take into consideration the group context. Visek (2010) suggests that if we leave the contextual information out of the analysis process the researcher will arrive at "distorted conclusions" but that factoring in the context can only lead to "richer and more illuminating" (p. 123) findings. Similarly, Carey (1995) recommended, "an appropriate description of the nature of the group dynamics is necessary to incorporate in analysis" (p 488). Thus the current study included both contextual and thematic analysis of the data.

6.1.5 Results
The results of the focus groups will be presented as a contextual analysis and a thematic analysis.

Contextual analysis
Hollander (2004) identified four aspects that should be considered when describing the context of focus groups. These included: the association context or the common characteristics that bring the participants together; the status context or the relative positions of the participants in local or social status hierarchies; the conversational context or the scope and nature and manner in which the topic is approached and discussed; and the relational context or the extent to which participants have a prior or existing relationship with each other. All 14 focus groups were analysed in light of these different contexts. It is beyond the scope of the current paper to provide a detailed analysis of the context for all 14 focus group sessions. Instead a summary of the collective context will be provided.

Fourteen focus groups were held. Focus groups ranged from three to nine participants. The composition of the groups was relatively similar. Given that the LIS profession is female-dominated it was not unexpected that few men participated in the sessions. Focus groups included very few participants from the special or school library context. This is perhaps not surprising given that many individuals in these contexts are working in one person libraries with little opportunity to be involved in a one hour non work related activity. In most of the focus groups, the participants did not know each other. This appeared to have a positive impact on the group discussion with participants appearing to speak comfortably and freely during the sessions.

The teleconference sessions were very effective in encouraging equal contribution by all individuals in the focus group. This may be because of the approach taken by the facilitator who would call on each individual participating in the session and ask if they had any comments to make. This approach was undertaken to help overcome some of

the issues associated with the lack of non-verbal cues inherent in the telephone approach. Whilst the first teleconference session had minor technical problems all other sessions were conducted without incident. In two of the focus group sessions (both face to face), "opinion leaders" (Visek, 2010) were clearly identifiable. Only in one group did this appear to have a slightly negative impact on discussions, with the identified "opinion leader" also being the only individual in the group holding a senior level management role. It appeared that this individual might have stopped others from freely expressing alternative opinions. Overall, whilst there were one or two important points to note about the focus group contexts the study's thematic analysis can proceed based on the premise that the context was having little negative impact on the nature of the group's discussions.

Thematic analysis
Whilst each focus group tended to draw on specific themes of interest to that particular group of people, there was also a great deal of common ground. The eight key issues in the discussions are briefly outlined below. They are not listed in any particular order of importance. Quotes from participants have been included to elaborate on the points being made.

- *Technology*
  Not surprisingly, the role of IT or technology in the context of librarian 2.0 was discussed. Interestingly there was a general consensus across all focus groups that whilst IT is important within the context of library 2.0 and librarian 2.0, it is not the dominant or main aspect. It was generally acknowledged that technology was a means to an end and not the end in itself. The successful librarian in the web 2.0 world (and beyond) needs to be aware of, and have some fundamental understanding of, the emerging technology – what is available and what it can do and how to make it do what is needed – but they do not need to be IT professionals per se. As one participant noted: "I get concerned when I just hear about the IT sides of things, and I think that is just one part of librarian 2.0". The difference between "IT skills" and "IT appreciation skills" was highlighted. As one participant observed, librarian 2.0 "makes technology their own". Librarian 2.0 should not be "tied to technology because by the time we've convinced the powers that be...to buy it a new 'you-beaut' thing has been developed". The need for librarian 2.0 to "talk the talk" with the IT professionals and managers was identified. One participant observed, "I see myself and what I can do as a bridge – translating techno geek". Many of the focus group participants acknowledged that librarian 2.0 needed to have a web presence, they should "be out there" and have "visibility on the web". Librarian 2.0 should be a role model; they should possess "knowledgeable credibility". Interestingly, one focus group noted the "elitism" that was emerging within the profession. One participant commented on the fact that we don't insist that all librarians like to read, so why than should we insist that all librarians have a web 2.0 presence? One participant noted that: "I am plugged in and connected but I can also walk away from it".

- *Learning and education*
  The need for librarian 2.0 to be interested in, and willing to engage in, lifelong learning was highlighted by all focus groups. It was acknowledged that the boundaries between IT professional and LIS professional were rapidly narrowing and that the skills and knowledge required by successful LIS professionals were becoming more complex and plentiful. Consequently librarian 2.0 must "know how to maintain their own [ongoing professional] education". Librarian 2.0 has an inquiring mind, enjoys playing and experimenting and loves learning. They are also willing to share their knowledge with their colleagues and to mentor and

coach others. As one participant observed: "openness and willing[ness] to learn are the heart of web 2.0". Librarian 2.0 engages in reflective practice, they "have a knowledge of oneself…they know their own strengths". They are willing to grow with the job. Librarian 2.0 is not only willing to be outside of their comfort zone but actually learnt how to be "comfortable within being out of their comfort zone". The successful librarian in the web 2.0 world is interested in what is happening around them, they scan the horizon and are aware of the outside world. As one participant noted: "current awareness is not just a catchcry, it is part of everyday work". Another participant went even further: "If they're not interested in learning new things ...if they are not engaged in the world around them there is no point really even having a conversation with them". The need for the LIS profession to have a compulsory professional development program was raised in one focus group. Librarian 2.0 is "not a clock watcher". They have the latest applications on their home PC and they are willing to explore and practice after the workday has finished. A 2.0 librarian is comfortable with different ways of working. Librarian 2.0 is a professional not a worker. The more formal educative role of LIS professionals in regards to serving the needs of their clients was also acknowledged. Web 2.0 requires librarians to take on the role of educator, trainer or guide. They must be able to explain complex things and help individual users and communities to make the best use of the available technology within their workplace or everyday life. Librarian 2.0 understands how people learn.

- *Research or evidence based practice*
  Participants saw research skills as being essential for the 2.0 librarian. Research is a way for librarian 2.0 to be making the best decisions, developing best practice and establishing benchmarking. Gathering evidence to demonstrate feasibility, and undertaking continual evaluation and assessment of resources and services being introduced in the ever changing, and frequently untested, web 2.0 world was seen as vital. One participant noted, "evaluation is one of the most important things we need to cover as far as web 2.0 is concerned". And more dramatically: "professional malpractice is not using evidence based research" in your professional practice.

- *Communication*
  All focus groups identified communication as being a core requirement for the 2.0 librarian. Whilst communication skills include the ability to engage in written and oral communication in diverse formats and media, they also include an array of more complex dimensions and aspects. Librarian 2.0 must know how to be an advocate and lobbyist for the resources and programs they want to introduce, especially when faced with IT departments or senior management who have competing agendas or policies. They need to be able to be good at negotiation and diplomacy and they should be able to use whatever 'language' is needed to persuade or influence the target audience to their point of view. A "good librarian is a chameleon". Librarian 2.0 should be good at marketing and promotion. They must be able to sell their skills and knowledge. Excellent presentation skills are essential.

- *Collaboration and team work*
  Almost all of the focus groups acknowledged that need for librarian 2.0 to work successfully as part of a team: "so much of what we are doing is done in multi-disciplinary teams". This point was raised because it was acknowledged that "you can't do everything, you can't go into all these technologies". Collaboration is no longer just an optional extra: "we're not talking about an individual being a repository for all this information, we are talking about within a group there are the

skills". Librarian 2.0 is also willing to build new relationships outside the library context. They work intimately with IT and other disciplines. Librarian 2.0 must be able to build relationships and partnerships and establish networks with individuals and groups wherever it is needed. They need to be a team player and able to work collaboratively across disciplines.

- *User focus*
Many of the focus group participants noted that library 2.0 was requiring librarians to develop a new relationship with their users or clients. They had to evolve into a more synergistic and equal partnership that involved both the 2.0 librarian and the user working together more as equals. Librarian 2.0 loves working with people, values the diverse experiences of users, looks at things from the user's perspective and seeks to actively use the emerging technologies to provide their users a voice. In the web 2.0 world the LIS professional is driven by a focus on people, not resources. They help to create communities. As one participant noted: "what you don't want is some techie that wants to sit at their computer and doesn't want to get involved in the whole community thing". The 2.0 librarian has learnt how to let go of their need to control. Their role is to "encourage people instead of protecting" them. As one participant noted: "web 2.0 enables us to interact with our users in a completely different way so that we are no longer the authoritative figure putting information out there". Interestingly, library 2.0 is also developing different expectations on the user's role: "they now have the ability to and the responsibility to contribute content". Librarian 2.0 is no longer the gatekeeper: "the gate now opens both ways". Although, it appears that old habits die-hard. When discussing the emergence of library catalogues that allowed client tagging, some participants were still not convinced: "but you could have a real mess!".

- *Business savvy*
Many of the participants discussed the need for librarian 2.0 to be business savvy. They need to have good project management skills. They should be outcome focused and able to multi-task and manage their time well. Librarian 2.0 "knows how to get things done". They are lateral thinkers who can prioritise and problem solve. They understand how organisations function and know how to influence, inform and enable strategic decision-making. They "understand the value propositions" inherent in their organisation and their profession. They are not only open to and able to manage change but are the drivers of change within their library service, their governing organisation and profession. The understand that the "ability to change is a vital thing" and are willing to "let go of the status quo". They are innovators who understand how to be entrepreneurial: "they go out and seek business". Librarian 2.0 is a leader.

- *Personal traits*
Participants unanimously agreed that the 2.0 librarian should possess a complex array of personality traits. One participant even declared that personality traits were more important than skills. Librarian 2.0 should be enthusiastic and inspirational. Librarian 2.0 should be able to clearly communicate an idea and through their passion, as one participant noted "you should be able to take a room full of people with you". They have vision, spark and creativity. They know how to lead and motivate. Librarian 2.0 is adaptable, flexible, persistent and resilient. In short, nothing fazes them. Librarian 2.0 is a self-starter who has no fear and is willing to move outside of their comfort zone. They are proactive and willing to take calculated risks. The 2.0 librarian aims for excellence, not perfection. It was noted that LIS professionals need to "get over ourselves"; we need to realise that

there is "no patient on the table" and be prepared to "release in beta mode". Librarian 2.0 has an open mind and is willing to try new things and learn from their failures – their mantra is "just do it". They know that it is okay to feel like a novice. They are willing to let go of the rules and to deal with ambiguity.

But haven't LIS professionals always been required to have these skills, knowledge and attributes? Interestingly, almost all focus groups responded to this question with, 'yes, but…'. The acknowledgement that successful LIS professionals need to possess transferable skills and interpersonal attributes is not new. In 1936, Harriet Howe noted that the "traits of the ideal librarian" included attention to detail, initiative, productivity in work and effective relations with people. In more recent years, numerous studies have been undertaken around the world noting the need for, or the role of, transferable skills within LIS profession (Masceviciute, 2002; Partridge & Hallam, 2004; Raju, 2003; Tedd, 2003). The results of the current study support this previous body of work. Overwhelmingly, participants argued that the LIS industry needs, and has in fact always needed, its practitioners to possess a mix of generic capabilities and interpersonal skills. But participants in this study also commented that the speed with which things are changing in the web 2.0 world was having a significant impact:

> *It's a faster pace. I think people have to get use to dealing with a world that moves [at] a much much faster pace than what we are used to.*

> *The speed has changed. Once upon a time the change was slow enough so that you could cope with it as just a part of normal life.*

> *How do you free people up to have the time and the necessary support to actually be able to stay current with everything that's going on and the ability to get out of the day to day detail?*

This faster pace is placing a new and unexpected emphasis on these "timeless" (Gutsche, 2010) skills and knowledge. As one participant noted:

> *Even if you were flexible you have to be even more so, you have to be even more inquisitive, you have to be even more multi-tasked, more multi-skilled.*

It was also acknowledged that all librarians need to possess these skills, knowledge and attributes and not just the one or two role models who lead the way:

> *people who have these skills are 1 in 100, [the] challenge is to make it the norm.*

> *not just one person, everyone has to be there, we all have to be competent at a level.*

> *everybody not just the hero worker.*

The idea of "survival of the fittest" was mentioned in a number of the focus group sessions. There was debate as to whether librarian 2.0 needed to posses all the skills, knowledge and attributes, or just some of them. Whilst no clear consensus was reached in regards this point, it was acknowledged that the level of competence for each skill, knowledge and attribute had become higher. Participants noted that "ours is an organic profession" and several participants talked about the "raising of the bar for the profession" and that there isn't room for "average, mediocre librarians anymore".

But perhaps the most interesting finding from the study is the idea that web 2.0, library 2.0 and librarian 2.0 is "a watershed" for the LIS profession. Almost all of the focus groups spoke about how they are seeing and experiencing a cultural change in the profession. Librarian 2.0 requires a "different mindset or attitude". It is "challenging our mental models" and forcing us to think about and perceive our profession differently.

Librarian 2.0 is an attitudinal shift for the Australian LIS profession. Interestingly, it was noted that because of this shift, not everyone in the profession is ready to be, or even wants to be, involved.

> *in the education sector we very much have an ageing workforce, now the ageing part doesn't worry me it's the minds that worries me*
>
> *if you want to do a job you have to change your mindset otherwise in five years time you won't have a job*
>
> *there's a massive cultural change in the library*
>
> *how you think about your profession has to change*
>
> *I think it indicates a change in our profession, a necessary change in our profession*

The results of this study suggest that what it means to be an LIS professional in Australia is changing. The Levels of Perspective model by Daniel Kim (1996) offers one lens by which to consider this point. Kim (1996) articulated five levels or perspectives from which to study a system (see figure 1). He points out that the further one moves from specific events towards mental models or vision the more leverage one has. According to Kim, 'leverage' refers to small, well-focussed actions that can produce significant lasting change. Leverage to alter a system can occur at any level but a key principal of systems thinking is that intervening at the higher levels (mental models or vision) is more likely to increase influence over future outcomes. A system is defined as "a perceived whole whose elements 'hang together' because they continually effect each other over time and operate toward a common purpose" (Senge, Roberts, Ross & Smith, 1994, p. 90). Assuming that the Australian LIS profession can, under Senge's definition, be defined as a type of 'system', it could be argued that the Australian LIS profession has focussed its time, energies and attention on the lower levels of Kim's model (ie events, behaviours and systematic structures). Indeed, one participant noted, "we are very good at creating systems and processes" and that we "need to move away from this". The findings of this study suggest that we are witnessing a re-awakening of the Australian LIS profession, as it begins to move towards the higher levels of Kim's model (ie mental models, vision). The study suggests that the Australian LIS profession is re-conceptualising who or what it is in light of the emerging web 2.0 world (and beyond). New and different mental models of what it means to be an LIS professional in the twenty-first century are being identified and explored.
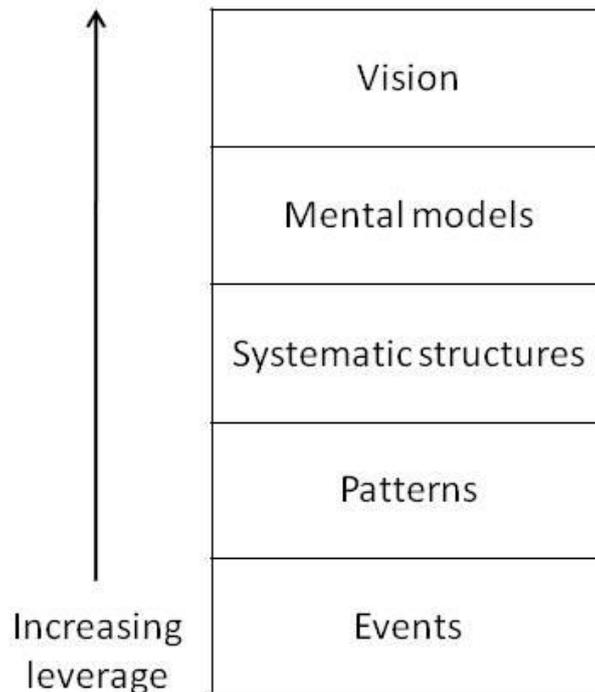
Figure 1. Levels of Perspective (adapted from Kim 1996)

6.2　Current LIS educational practice

The aim of this part of the fellowship program was to establish the current state of LIS education in Australia in supporting the development of librarian 2.0, and in doing so, identify models of best practice.

6.2.1　Semi-structured interviews

Semi-structured interviews were used for data collection. Kvale (2007) describes interviews as "a conversation that has a structure and a purpose determined by the one party – the interviewer" (p. 7). Through this conversation, the interviewer has a "unique opportunity to uncover rich and complex information" (Cavana, Delahaye & Sekaran, 2001, p.138). Interviews allow research participants to tell their own story in their own words. Rubin and Rubin (1995) suggest that an interview is "a great adventure...it brings new information and opens windows into the experiences of the people you meet". (p. 1). Semi-structured interviews are an appropriate choice for the current study because of their suitability in obtaining information about people's views, opinions, ideas and experiences. (Arskey & Knight, 1999). The semi-structured interview "is a uniquely sensitive and powerful method for capturing the experiences and lived meaning of the subject's everyday world" (Kvale, 2007, p. 11). Semi-structured interviews, however, have both advantages and disadvantages. Whilst they provide an invaluable insight into people's everyday lives they can potentially be limited by the small number of respondents that participate, the limitations on generalisability to a larger population, and the bias of the interviewers' influence and interests. Every effort was made to strengthen the advantages and to the limit the disadvantages of the semi-structured interview approach used in this study.

6.2.2 Participants

As this is a study exploring the current understandings and practices of LIS educators in regards to LIS education and how to develop librarian 2.0, it was important that the participants had diverse and rich experiences within LIS education. This would help to reveal the range of views, experiences and practices that are currently exist in Australian LIS education. A combined purposive and snowballing sampling approach was selected as the most effective option for recruiting participants. Personalised e-mails were sent to LIS educators, inviting them to take part in the study. In addition, at the end of each interview, participants were asked if they knew of anyone else who should be invited to take part in the study.

Thirty-six subjects participated in the study. The participants came from six Australian universities. Perhaps reflecting the current female domination of the LIS profession generally, the gender balance of the study's participants was skewed to the female gender with only 13 males taking part in the interviews. The participants' experience ranged from 18 months to 37 years, with an average of 7.54 years spent working in LIS education. The majority of the study's participants were full time academics, and seven participants had responsibility for program or degree coordination. Eighteen indicated that they were involved in both undergraduate and postgraduate education. The remaining participants were focussed solely on postgraduate education. The participants represented quite different teaching modes, with 13 participants involved in online delivery only, 14 were engaged in face to face delivery only and nine were conducting their teaching in both delivery modes.

Total	36			
Gender	Female	23	Male	13
Time in LIS education:	Range	18 months–37 years	Average	7.54 years
Employment status:	Full time	30	Sessional/casual	6
Degree level offered:	Postgraduate only	17	Undergraduate only:	1
	Both undergraduate and postgraduate:			18
Delivery mode:	Online only	13	Face to face only	14
	Both face to face and online			9
Degree/program co-ordinator	Yes:	6	No:	30

Table 2. Participant profile (interviews)

6.2.3 Data collection

The interviews were held in October and November 2009. All interviews were conducted by telephone and were audio recorded. There was no predetermined length for the interviews and participants were free to continue talking for as long as they wished. On average, interviews lasted approximately one hour. The telephone approach was used in the current study as it allowed participants to be included from geographically remote locations. Given the focus of the study, this was an important dimension to include within

the research design. The main disadvantage with this approach is the lack of non-verbal cues. Kvale (2007) suggests that telephone interviews risk losing the interpersonal chemistry between the interviewer and respondent that is vital to generating the motivation and interest in an interview (p. 123). He also notes that telephone interviews can be extremely hard work to keep going because the interviewer and respondent have only vocal communication to go by. To overcome these potential issues, the interviewer in the current study made sure that they spoke distinctly and understandably using clear, simple, easy and short questions. They also allowed the interviewee to finish what they were saying, letting them proceed at their own rate of thinking and speaking.

The one interviewer conducted all interviews (ie the Research Assistant).The general aim of the interview was to develop a greater understanding of the current practices and activities being used within Australian LIS education, to help develop students into librarian 2.0. The interview was broken up into four parts. The first part involved what Kvale (20007) calls the 'briefing' (p 55). It involved the interviewer introducing themselves, describing the interview process and establishing a basic profile of the interviewee. Kvale (2007) notes that the briefing is an extremely important part of the interview as it sets the interview stage and helps encourage the interviewee to feel relaxed enough to talk freely. The second part of the interview was aimed at orientating the participants to the concepts of library 2.0 and librarian 2.0. The following open-ended questions were used to stimulate discussion:

- What is library 2.0?
- What are the skills and knowledge required by librarian 2.0 in library 2.0 (and beyond)?
- Do the skills and knowledge of librarian 2.0 represent a new and different type of skill and knowledge set? Haven't we always had these?

In the third part of the interview, respondents were invited to discuss what they were doing in their own teaching to help develop the skills and knowledge of librarian 2.0 in students. This part of the interview was kept very loose and was very much driven by the interviewee and where they wanted to take the conversation. The semi-structured interview, perhaps more than other type of interview, depends upon the rapport established between the interviewer and interviewee (Kvale, 1996). The skill and ability of the interviewer is therefore very important in establishing a quality interview. To ensure this was achieved in the current interviews the interviewer followed the advice of Kvale (2007). The interviewer was sensitive to the respondent and listened actively to the content of what was said, and the many nuances of meaning in an answer. The interviewer was open and willing to hear which aspects of the interview topic were important to the interviewee. They followed new aspects introduced by the interviewee. The fourth and final part of the interview was the "debriefing" (Kvale, 2007). This is when the interviewer thanked the respondent for their involvement and answered any questions they may have on the project.

6.2.4 Data analysis

Cavana, Delahaye and Sekaran (2001) noted that analysis is undertaken to "identify the underlying themes, insights and relationships within the phenomena being researched" (p. 169). The main purpose of the interviews conducted in the current study was to identify and explore the current activities and processes LIS educators are using in their teaching and learning practice to help their students to become "librarian 2.0". A key purpose of the interview was to identify examples of best practice. According to Rubin and Rubin (1995) "qualitative analysis is not about mere counting or providing numeric summaries" (p. 202), instead its purpose is to "discover variation, portray shades of meaning and examine complexity" (p. 202). The data analysis process undertaken in the

current study was an iterative one, constantly grounded in the interview data. The Fellow spent time listening to the audio recordings and reviewing the transcripts. The Fellow was seeking to identify the emerging themes and to determine the similarities, differences and potential connections among keywords, phrases and concepts within and among each interview. In addition, analysis considered the concepts and themes indirectly revealed (Rubin and Rubin, p. 210). Rubin and Rubin (1995) noted that "you may discover themes by looking at the tension between what people say and the emotion they express" (p. 210).

6.2.5   Results
Whilst each interview tended to draw on the specific context and themes of interest to that particular interviewee, there was also a great deal of common ground. The results of the interviews will be presented here under two themes: (i) library 2.0 and librarian 2.0; and (ii) LIS education 2.0. Quotes from participants have been included to elaborate on the points being made.

Library 2.0 and librarian 2.0
The LIS educators, like the LIS professionals who participated in the focus groups (see section 6.1) observed that library 2.0 involved "incorporating web 2.0 technologies into the work that is done by librarians and libraries" but that ultimately library 2.0 was about "more than just technology". Library 2.0 was allowing libraries and librarians to interact and relate to their users in new and different ways. It was an "opening up of the library". In a web 2.0 world the library is far more interactive and involves a greater degree of engagement with the user community. Library 2.0 is a "two-way interaction", with a focus on "connecting with people". As one participant noted "collaboration is what it is all about". According to the LIS educators "library 2.0 is a state of mind that a librarian needs to have" to be successful in the contemporary age.

The skills and knowledge of LIS professionals in a web 2.0 world (and beyond) that were identified and discussed by the LIS educators mirrored those highlighted in the focus group discussions with LIS professionals (see section 6.1). Librarian 2.0 needs a mix of personal traits and attitudes to support IT skill and knowledge. As one participant observed

> *They need to be adventurous, willing to explore and try new things, to have a sense of collaboration. They need to be comfortable working online...They need to be prepared to try to experiment with the new things that come along…They need to have a feeling for educating their clients… They need to be learners.*

It was noted that skill and knowledge will change and that LIS education should focus less on the skill and knowledge acquisition and development and more on fostering a "mindset" that emphasises "being capable of learning to learn, being adaptable and flexible…looking at things in a critical and analytical way". It was also acknowledged however by one participant that whilst the open mindset you want to develop might be easily described, "I am not sure how you go about doing it". According to the LIS educators, the skills and knowledge required by librarian 2.0 are neither new nor more important than ever before. The successful librarian has always needed them, but as one participant noted "I don't know if we have always had them". Many noted that in regard to librarian 2.0 it was a case of "transferring and translating" existing skills and knowledge into the context of a new and emerging technological landscape. Whilst some of the educators acknowledged that the speed of change has resulted in renewed importance on some elements (ie personal traits) others dismissed this idea: "I remain to be convinced that they are more important when I first started applying for library jobs 25 years ago".

Whilst the LIS professionals overwhelmingly spoke about how they were seeing and experiencing a paradigm shift within the profession, the LIS educators did not speak with one voice on the matter. Many LIS educators noted that there was indeed a fundamental change within the profession and that those "who don't see it that way are going to be left behind". In contrast several of the educators thought calling the current situation a paradigm shift "might be overstating it a bit". It was noted that "we are moving with the technology just like everybody else" and as such it is merely the "same principles in a different environment" and that we shouldn't "spend too much time mulling over it". Interestingly quite a number of the academics interviewed were not entirely certain if there was a paradigm shift or not: "I am not sure how to answer this as I am not sure what the old paradigm was" or "I have never thought of that before". Perhaps as one participant observed only time would tell: "it is only going to be in perspective of the 20 to 30 years that we are going to understand what we went through in the last 10 to 15". Interestingly one participant whilst not sure if a paradigm shift was occurring or not suggested that that library 2.0 and librarian 2.0 might be "the profession finally waking up, getting a kick up the arse to get its act together". Building on from this point a number of LIS academics noted that there is a blurring of boundaries with librarians taking on more diverse roles than ever before and as one participant suggested before we can decide whether the profession is going through a paradigm shift we must first consider: "what is the professional practice of librarians? How do librarians understand their own professional practice?"

This study provides evidence for "disparate viewpoints" (Hallam, 2007) between LIS educators and LIS professionals that can have a significant implications for the future of not just LIS professional education specifically but for the profession generally. The key points of difference are: (i) whilst LIS professionals felt that transferable skills were becoming more important than ever before this was not as universally acknowledge by the LIS educators; and (ii) whilst the LIS professionals felt that web 2.0 was a stimulus for a paradigm shift in which the profession was beginning to re-conceptualise who or what it is this was not as collectively accepted by the LIS educators.

Library and information science education 2.0
Inviting the LIS academics to discuss how their teaching and learning activities support the development of librarian 2.0 was a core part of the interviews conducted. This section will highlight the key themes that emerged from this discussion. The themes will be presented under two headings: strategies and challenges. The themes are not listed in any particular order.

The following themes emerged from the interviews as examples of _strategies_ used by the LIS educators in supporting the development of librarian 2.0:

- Assessment should be authentic and provide a stimulating and yet challenging learning context for students. One participant noted that they seek to "make it as normal as possible" by using "real life examples and real life tools". Our goal is to help prepare their students to be "job ready for today's jobs but also for jobs in 10 years time as well".

- Informal learning activities should be used to help students to "put their little toes in the water" so that they can build up their confidence, skills and knowledge in a non-threatening way. It is important to help the "students to get out there and have a play". One participant called this "stealth learning" as the students were not necessarily conscious that they were learning.

- A 'whole of degree' approach should be taken. The subjects within the degree should build upon each other in a scaffolded manner. Subjects are not isolated but linked this helps the students to "see the bigger picture" of what they are doing and becoming.

- Modelling is an important vehicle for educators, especially in those areas that can't be taught per se (ie passion, enthusiasm). "You are fostering an approach [to the profession] rather than teaching it". As one participant observed "you try and show that you are motivated towards the topic … you are always showing that things are inspirational to you in the hope that it rubs off on the students".

- Reflective practice is an essential part of an LIS professional's toolkit, helping students to become reflective practitioners is core to LIS education. ePortfolios are a key vehicle for achieving this.

- Focus on helping students to learn how to learn and to not focus on a particular technology or application. As one participant noted it is a changing feast and "you have to pitch it so students can grasp principles and not get too caught up in the technology".

- The advantages of offering degrees in an online mode were highlighted. With the emergence of library 2.0 studying online has become a "milestone activity". As one participant noted "if people in the profession can't handle being taught online and use online tools then they really can't be in the profession"

The following themes emerged from the interviews as examples of _challenges_ faced by the LIS educators in supporting the development of librarian 2.0:

- A lack of confidence is an issue for many LIS educators: "I don't think I do it very well". For many educators this stems from competing priorities and lack of time: "it is hard to continually keep up to date". Many of the LIS educators indicated that they were "learning as I am doing". As one participant noted "I do play around with these things but [the students] need someone who lives and breathes it…people who are involved with it more on a day to day basis in a library environment". As one participant observed "you talk to educators around the place and you get a feel for who is on top of things".

- The LIS curriculum is already 'bulging" as one participant noted, "you could end up with a five year degree and still not fit all the stuff in". This is augmented by the need to include requirements from both accrediting bodies and industry which don't always match one another.

- The ability for professional education to teach students attitudes or personal traits was questioned. As one participant noted "I don't know I if we have every increased a student's propensity to take risks, I don't know if we have ever enhanced a students innate communication capacities, I don't know if we have done a lot to increase their capacity to work in teams. Our students are 30 or 40 years of age they have had other careers, other professional other work lives, we don't get them when they are 6 or 7 years old". Linked to this is the challenge that the LIS profession traditionally does not attract the brightest and the best, as one participant observed "we have an issue on how to recruit people in to the program". We need attract them by "making the job look interesting and challenging".

- Technology can be both a blessing and burden. The LIS educators try to "not be constrained by the technology that we have" but as one participant noted "I talk about social networking but the learning management system doesn't offer them" or "Blackboard gets shut down and locks students out". It was also noted "if you are an educator in the web 2.0 world you have to take on a lot of responsibility for IT support yourself".

- Whilst all of the educators agreed that learning to become librarian 2.0 required skills and knowledge that were far more complex and broad ranging than merely technology or IT, when asked to describe how their teaching and learning supported the development of librarian 2.0 almost all of the academics interviewed immediately commenced discussions by focussing on their use of specific web 2.0 technology or applications (ie blogs, wikis) within their learning environments. In short, they focussed on using web 2.0 in their teaching practice and not on how their learning environments support becoming librarian 2.0. A subtle, but important distinction.

A core part of the fellowship was the identification of best practice examples on how LIS educators were developing librarian 2.0. Twelve best practice examples were identified. Each educator was recorded discussing his or her approach to teaching and learning. Videos of these interviews are available via the Fellowship blog at <http://liseduation.wordpress.com>. The LIS educators involved in making the videos felt uncomfortable with the term 'best practice'. Many acknowledged that there simply seeking to do the best by their students and that there was always room for improvement. For this reason these videos are offered as examples of "great practice". The videos are a tool for other educators to use, regardless of discipline, in developing their teaching and learning approaches to supporting web 2.0 professionals.

6.3   Conclusions and next steps

The results of the fellowship have provided some interesting insights into the skills , knowledge and attributes needed by the Australian LIS professional in the web 2.0 world (and beyond). The fellowship highlighted that librarian 2.0 is less to do with technology and more about quality transferable skills and interpersonal abilities. Of greater note is the fellowship's finding that librarian 2.0 is more about changing attitudes and ways of thinking than anything else. The real power of web 2.0 is not how it is changing the way LIS professionals design and delivery services and resources, or the new skills and knowledge that these professionals are now being required to possess, but how it is changing the ways in which the Australian LIS professional conceive of themselves. This fellowship suggests web 2.0 is the catalyst for a significant attitudinal shift in the Australian LIS profession. The challenge the profession now faces is trying to clearly articulate the nature and scope of this new professional attitude. The LIS profession in Australia must take stock not of "what we know and can do" but on "who we are becoming" (Dall'Alba, 2009, p 34).

It has been argued that the main purpose of professional education is transformation (Dall' Alba, 2009; Dall'Alba & Barnacle, 2007). As such professional education should focus not just on skill and knowledge acquisition but also on helping students to develop ways of *being* the professionals in question (ie LIS professionals, teachers, lawyers, engineers) (Dall'Alba, 2009). This is not to say that skill and knowledge is not important (Barnett, 2004). Rather it suggests that skill and knowledge alone does not ensure skilful professional practice. Nor does it achieve the transformation required for students to be able to successfully undertake such practice (Dall'Alba, 2009). To be successful, professional education must "engage the whole person, what they know, how they act,

and who they are" (Dall' Alba & Barnacle, p. 689). Consequently, there is a call for professional education to shift from a focus on epistemology (ie what students know and can do) in itself to a focus on epistemology in the service of ontology (ie who students are becoming) (Dall'Alba, 2009). In other words, professional education must begin to embrace that "learning is not confined to the heads of the individuals but involves integrating ways of knowing, acting and being within a broad rage of practices" (Dall'Alba & Barnacle, 2007, p. 683). This new way of understanding and approaching professional education has implications for the current fellowship specifically, and for the LIS profession generally.

The aim of this fellowship was to establish *Guidelines for Library and Information Science Education 2.0* it has however become apparent that at this point in time it is not yet possible to fulfil this aim. The fellowship has clearly identified skills and knowledge needed by the LIS professional in web 2.0 world (and beyond). It has also identified examples of 'great practice' by LIS educators as they endeavour to develop LIS professionals who will be successful in a web 2.0 world. The fellowship however has also shown that the LIS profession is currently undergoing significant attitudinal and conceptual change. Consequently, before a philosophy of LIS education 2.0 can be expressed the Australian LIS profession must first explore and articulate what it means to *be* an LIS professional in the 21st century (ie a world of web 2.0 and beyond).

7.0   Outcomes amendable to implementation elsewhere

The fellowship program was designed to identify the current and anticipated skills and knowledge required by LIS professionals in a world of web 2.0 (and beyond) and to critically consider the state of LIS education in Australia in supporting the development of the librarian 2.0.

Although the fellowship focused on the LIS discipline, the outcomes will have significant influence and impact on other disciplines. The impact of web 2.0 is forcing many disciplines to re-consider the skill and knowledge base of their profession, and the effectiveness of their educational programs in supporting the development of "web 2.0 professionals". Indeed, a cursory look at current literature suggests this is starting to take place in fields such as medicine (McLean, Richards, Wardman, 2007), nursing (Skiba, 2007) and health care services and organisations (Spallek, O'Donnell, Clayton, Anderson, & Krueger, 2010).

The resources developed from this fellowship program (ie key findings, the best practice 'videoettes') have been designed to act as a road map not just for the LIS discipline but other disciplines as they begin to confront a similar challenge in their own sector. These resources will provide foundations upon which other discipline-level models can be built. To this end, the program helps facilitate national approaches to address a key educational issue.

An invited presentation at James Cook University in October 2009 provides evidence of the transferability of the fellowship program to other disciplines. The presentation considered the implications of the fellowship's findings for professional education generally. Academic and professional staff from a diverse range of disciplinary contexts attended the presentation (ie law, medicine, education).

# 8.0 Links with other ALTC Fellowships and projects

There are a number of ALTC Fellowships and projects which are related in some way to the fellowship program described in this report, either because they have a focus on web 2.0 technologies and applications in higher education teaching and learning, or because they have a focus on re-inventing or re-positioning professional education to ensure it is more effectively meeting the needs of the profession it supports. Some of these ALTC Fellowships and projects include:

Web 2.0

2009   Getting a MUVE on: developing Web 2.0 curricula in the humanities. (David Lemming). ALTC Priority Project. http://www.altc.edu.au/project-getting-a-muve-on-adelaide-2009

2009   Remix, mash-up, share: authentic Web 2.0 assessment scenarios and criteria for interactive media, games and digital design. (Ingrid Richardson). ALTC Priority Project. http://www.altc.edu.au/project-remix-mashup-share-web20-assessment-murdoch-2009

2009   Web 2.0 authoring tools in higher education learning and teaching: new directions for assessment and academic integrity. (Kathleen Gray). Priority Project. http://www.altc.edu.au/project-web20-authoring-tools-higher-education-melbourne-2009

2009   Using cost-effective multimedia to create engaging learning experiences in law and other disciplines. (Des Butler) ALTC Teaching Fellow. http://www.altc.edu.au/altc-teaching-fellow-des-butler#program-summary

2009   Rethinking assessment in the participatory digital world – assessment 2.0. (Geoffrey Crisp). ALTC National Teaching Fellow. http://www.altc.edu.au/altc-national-teaching-fellow-geoffrey-crisp#program-summary

2008   Learning in Networks of Knowledge (LINK) Improving student educational outcomes in online learning, using Web 2.0 concepts and a knowledge-networking approach. (Matthew Allen) ALTC Teaching Fellow. http://www.altc.edu.au/altc-teaching-fellow-matthew-allen#program-summary

2007   Teaching, technology and educational design: the architecture of productive learning environments. (Peter Goodyear). ALTC Senior Fellow. http://www.altc.edu.au/altc-senior-fellow-peter-goodyear#program-summary

2006   Promoting the uptake of re-usable ICT based learning designs. (Ron Oliver). ALTC Associate Fellowship. http://www.altc.edu.au/altc-associate-fellow-ron-oliver#program-summary

Professional Education

2010   Reinvigorating student learning with embedded learning and teaching strategies that enhance identity development (Dawn Bennett) ALTC Teaching Fellow http://www.altc.edu.au/altc-teaching-fellow-dawn-bennett#program-summary

2010   Re-conceptualising and re-positioning Australian library and information science education for the 21st century. (Helen Partridge). ALTC Priority Project. http://www.altc.edu.au/project-reconceptualising-repositioning-library-education-qut-2009

2009   Curriculum and pedagogic bases for effectively integrating practice-based experiences. (Stephen Billett) ALTC National Teaching Fellow

http://www.altc.edu.au/altc-national-teaching-fellow-stephen-billett#program-summary
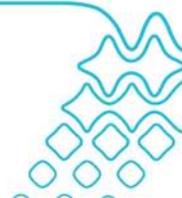
2009   Supporting student transition to a futures-oriented professional identity. (Ieva Stupans). ALTC Teaching Fellow. http://www.altc.edu.au/altc-teaching-fellow-ieva-stupans#program-summary

9.0   Factors critical to program outcomes

A number of factors were critical in ensuring the fellowship program achieved quality outcomes:

1.   *High level project officer support*

   For this fellowship, which included large amounts of data, negotiating with many individuals and the production of creative elements such as blogs pages and 'videoettes', the support of a project officer was key to enabling smooth progress and timely completion. The fellowship was well supported by four excellent project officers during the life of the program.

2.   *Strong industry support and engagement with the fellowship program*

   The success of the fellowship program was very much dependent on the willingness of the Australian LIS sector (practitioner and educator) to support and engage with program activities. The high level of interest and support obtained from the LIS sector throughout the life of the fellowship program was gratifying and provided further validation of the importance of the program topic to this professional community.

3.   *Strong institutional support*

   Support from the institution was critical to the success of the fellowship. Time away from teaching ensured that I had the time needed to achieve quality outcomes. The Deputy Vice Chancellor (Teaching Quality) established an ALTC Fellows' Group who met regularly and provided invaluable guidance and feedback during the fellowship journey. The personal and professional interest of many QUT colleagues in the fellowship program has been validating and encouraging.

4.   *ALTC network and support*

   Having access to the ALTC Fellows through regular forums provided a very real grounding to my fellowship program. It helped to keep things real. It also provided a means by which to judge criteria and quality. The advice and flexibility of the ALTC staff also helped set 'the tone' of the program and it was refreshing to know that the ALTC whilst eager to have quality outcomes were also equally interested in ensuring their fellows had positive learning experiences.

5.   *Fellowship programs don't end*

   A key factor in ensuring success was getting my head around the fact that the fellowship program never really ends. It has taken me a while to understand that I needed to be realistic about what I would be able to achieve within a 12 month time frame and to embrace the view that the fellowship program really is just the beginning of something exciting and long term. I also needed to accept that the fellowship programs are flexible, fluid and dynamic in nature. No matter how carefully planned it may have been, things will change; and this is a good thing. Once I was able to accept all of this I was better able to embrace and take advantage of what it means to be an ALTC Fellow.

A number of factors may have impeded the fellowship program in achieving quality outcomes:

1. *The success of being an ALTC Fellow*

   The role of ALTC Fellow brings with it many unexpected challenging and rewarding opportunities. Most notable was the offer to take on the role of Acting Assistant Dean Teaching and Learning (ADTL) for the Faculty of Information Technology from September 15 to December 31 2008. This offer came only two weeks after officially commencing the fellowship program. Following on from the ADTL role, I was offered the full time ongoing role of Deputy Head of School (Learning and Teaching) for the School of Information Technology within the newly formed Faculty of Science and Technology, commencing on January 1 2009. As an ALTC Fellow the challenge, and lesson to be learned, is knowing how best to 'manage' the success that arises from being an ALTC Fellow.

2. *High level project officer support*

   I have raised this point as both a positive and negative factor impacting on fellowship outcomes. Having quality project officers to support the fellowship program is important. The challenge is that finding and holding on to quality project officers can be extremely challenging. One month before commencing the fellowship program, the person who had agreed to take on the project officer role withdrew their offer to participate in the program. Finding another suitably qualified and experienced person to take on this role was difficult. An appointment was eventually made not long after the program commenced. This person however resigned this role after five months to take maternity leave. Once again, another suitably qualified and experienced person had to be located. The lesson learned here is the need to have a pool of high quality and available individuals to draw upon for research assistant work.

10.0 Sharing outcomes of the fellowship

The outcomes of this fellowship have been shared in several ways. Some sharing was informal, involving members of the LIS community nationally (for example at LIS forums such as those offered by the Australian Library and Information Association). Sharing was also formal and below is a list of papers, conference presentations and invited talks in which the fellowship activities and outcomes were disseminated. Several initiatives/projects emerged as a direct consequence the fellowship.

Web Presence
Given the fellowship's focus on web 2.0, it was appropriate that the web was used as a key part in disseminating and promoting the fellowship program. Two environments were established:

- A program blog - http://liseducation.wordpress.com
  This blog was established to be the primary dissemination and promotion tool during the life of the fellowship. It was also being used to assist with data collection as members of the library and information science industry were invited to contribute to the blog's content. Whilst no longer active, the blog will stay live to be a 'living record' of the fellowship journey. During the life of the program, the blog received 7470 visits and had 30 comments posted.
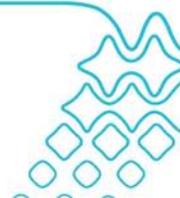
Peer Reviewed Journal Papers:

Partridge, H., Lee, J., & Munro, C (2010). Becoming 'librarian 2.0': the skills, knowledge and attributes required by library and information science professionals in a web 2.0 world (and beyond). Library Trends. 59(1/2), 315-335. (ERA B)

Partridge, H., Menzies, V., Lee, J. & Munro, C. (2010). The contemporary librarian: skills, knowledge and attributes required in a world of emerging technologies. Library and Information Science Research. 32(4), 265-271. (ERA A*)

Invited talks

Partridge, H. (2008) IM education and careers. National Information Management Skills Summit, Brisbane, 15 October 2008.

Partridge, H. (2008) Library and information science: The ever-changing profession. Griffith Library Community of Practice Forum 2008, Griffith University, Brisbane, 20 November 2008.

Partridge, H. (2008) Library education: The future is now. Queensland Public Library Association Annual Conference, State Library of Queensland, Brisbane, 19-21 October 2008.

Partridge, H. (2009) Becoming librarian 2.0. Oslo University College, Oslo, Norway, 13 November 2009.

Partridge, H. (2009) Becoming librarian 2.0. Swedish School of Library and Information Science, University of Boras, Sweden, 16 November 2009.

Partridge, H. (2009) Librarian 2.0: The most adaptable to change!? Australian Law Librarians' Association Evolution Conference 2009, Darwin, 2-4 September 2009.

Partridge, H. (2009) May we work in interesting times: Librarian 2.0 and beyond. CAVAL Reference Interest Group, Information Literacy in Interesting Times Seminar, Melbourne, 25 November 2009.

Partridge, H. (2009) Survival of the fittest: Professional education in Australia. Queensland University of Technology's ALTC Fellows' Seminar Series. Gardens Point Campus, Brisbane, 21 July 2009.

Partridge, H. (2009) Transformation in the contemporary workforce: Impact of new technologies on professional education. SCDC Seminar Series. James Cook University, 1 October (Cairns Campus) and 2 October (Townsville Campus) 2009.

Partridge, H. (2010) (Invited) Survival of the fittest: being a professional in the age of Twitter, iPhones and Facebook. Scholarly Information Futures Seminar, Griffith University, 28 October, 2010.

Partridge, H. (2011) Being a library and information professional in the age of Twitter, iPhones and Facebook...? Bodleian Library, University of Oxford, UK, 18 March 2011.

Partridge, H. (2011) Professional education in the age of Twitter, iPhones and Facebook. Educational Technology Research Group, University of Manchester, UK, 4 March 2011
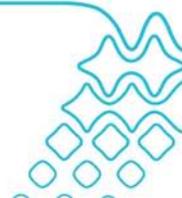
Partridge, H. (2011), Survival of the fittest: professional education in the age of twitter, iphones and facebook. Oxford Internet Institute, University of Oxford, UK, 18 February, 2011.

Conference presentations

Partridge, H. (2008) Do we need library and information science education 2.0? Reality 2.0. Australian Library and Information Association - Special Library Association Seminar Series for Information Professionals, Brisbane, 11 September 2008.

Partridge, H. (2009) Becoming librarian 2.0. CAVAL People in the Information Profession Conference, Victoria University, Melbourne, 15-16 October 2009.

Partridge, H. (2010) (Invited) Into the future: information management education for the digital age. Digital Information Management Summit, Dockside Convention Centre, Sydney, 9-10 November 2010.

Partridge, H. (2011) Librarian 2.0: it's all in the attitude. Presentation at the Association of College and Research Libraries (ACRL) Annual Conference, Philadelphia, USA, March 30-April 2, 2011.

Industry newsletter

Partridge, H. Blog launch lets you have your say about librarian 2.0. Incite, 30(6), p. 26.

Initiatives/projects to emerge from the fellowship:

The fellowship program provided the groundwork for the following initiatives and projects to take place:

2010   Faculty of Science and Technology Teaching and Learning Grant, QUT, *Blended learning: developing a 'whole of course' approach* (Julanne Neal, Kate Davis, Helen Partridge, Christine Bruce) $10,000.
The primary objective of this project is to establish a 'whole of course' blended learning approach. It will provide strategies and recommendations for offering not just an individual unit but an entire degree in a blended mode of study. They will be developed to respond to the unique context of the Faculty of Science and Technology specifically and QUT generaly

2009   Australian Learning and Teaching Council Priority Grant, *Re-conceptualising and re-positioning Australian library and information science education for the twenty-first century* (Helen Partridge) $219,000.
The project will develop a 'Framework for the Education of the Information Professions in Australia'. The Framework will provide guidance on how best to reposition and reshape Australian LIS education to ensure it remains dynamic, responsive and sustainable to the evolving information age in order to meet the ever-changing marketplace demands of the 21st century. next generation of professionals.

2009   European Commission's Erasmus Mundus Scholarship Visiting Scholar, International Master in Digital Library Learning (DILL), Oslo University, November 2009 (Helen Partridge) 5,000 EUR.
The two-year DILL Masters Program for information professionals was developed to educate those individuals who intend to work in the complex world of digital libraries. The program is a joint initiative between Oslo University College (Norway), Tallinn University (Estonia), and Parma University (Italy). Students spend at least one semester at each institution.

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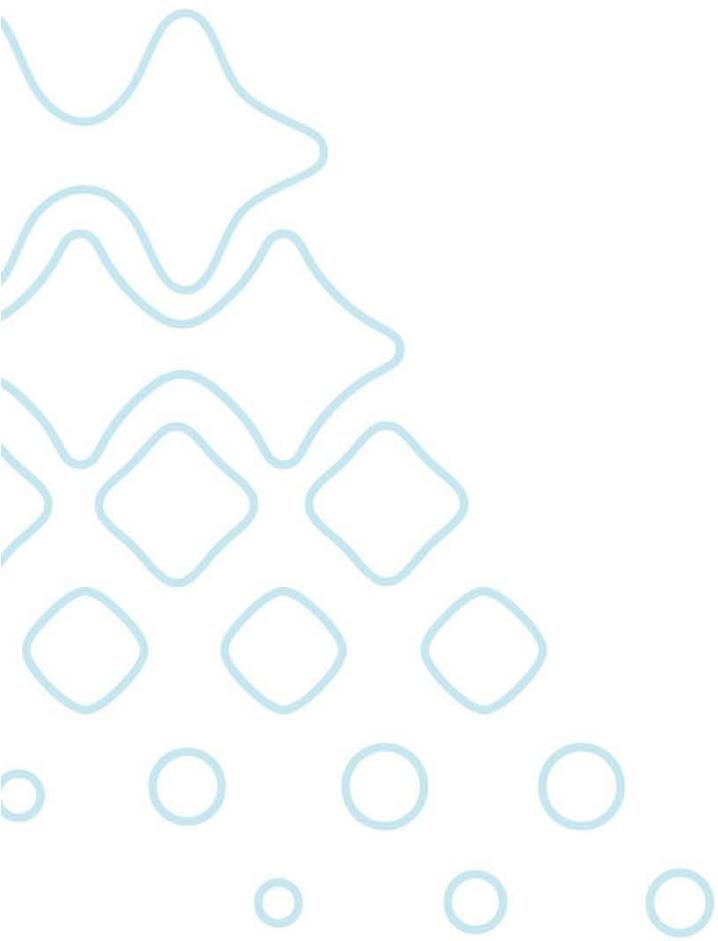
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