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THE DEVELOPMENT OF DIGITAL LITERACY AND INCLUSION SKILLS OF PUBLIC LIBRARIANS

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This paper examines the extent to which public librarians are successfully prepared to engage the community in digital literacy and inclusion. A qualitative, multiple case study research design was chosen, using an analysis of policy documents and existing training programs offered by the libraries together with semi-structured interviews with public librarians and library management. This was followed by an analysis of Masters in Library & Information Science programs. The majority of public librarians felt that information technology skills and transferable skills were perceived to be equally important. However most of the public librarians identified quite a few gaps between what they learned in their library program and how it translated into their working environment. They also expressed a great interest and need for additional on-going technical training and development to promote digital literacy and to become proficient in understanding the needs of the community. Gaps in MLIS programs were identified around the areas of e-Books, basic PC trouble shooting, social media and communication skills. This study concludes with several recommendations for public libraries and for MLIS programs to foster digital literacy and inclusion.

Communications in INFORMATION LITERACY

INTRODUCTION AND BACKGROUND

Public libraries play an important role in creating inclusive, digitally-literate communities via the provision of online health, employment and education information as well as digital literacy training programs (Information Policy & Access Center, 2013, p. 2, Manjarrez & Shoembs, 2011, p. 1, American Library Association Office for Information Technology Policy, 2013, pp. 16-17, Becker, Grandall, Fisher, Blakewood, Kinney, Russell-Sauvé, 2011, p.18-19). Digital literacy (DL) has been described as "a constellation of life skills that are necessary for full participation in our media-saturated, information-rich society" (Hobbs, 2010, pp. vii), including "those capabilities that mean an individual is fit for living, learning and working in a digital society": the ability to locate, organize, understand, evaluate, analyze and present digital information, but also to appraise the impact of new technologies and manage digital identities (BCS The Chartered Institute for IT, 2013). Therefore, DL "looks beyond the development of functional IT skills to describe a richer set of digital behaviors, practices and identities" involving critical thinking, reflection and life-long learning, communication, collaboration, and social engagement (JISC, 2014).

A necessary condition for enabling the development of DL and for empowering modern citizens to exploit new possibilities offered by technology is digital inclusion (DI). DI has been mainly linked to Internet connectivity, and in the past five years within the United States significant progress has been made to expand Internet broadband access to the community via two major federal initiatives: the *National Broadband Plan* and the *Broadband Technology Opportunities Program* (American Library Association Office for Information Technology Policy, 2013). However, DL and DI are interconnected issues, operating in a complementary fashion as "without access, people cannot develop digital literacy; without digital literacy, they cannot gain maximum benefit from online resources" (Information Policy and Access Center, 2013, para. 4). As the use of Internet activities (e.g. email, searching, online banking and shopping, social networking) is increasing and becoming more varied, the digital literacy skills gap is further widening between those who are online and those who are not.

DIGITAL LITERACY COMPETENCIES OF PUBLIC LIBRARIANS

In order to support DI and the development of DL for the communities they service, public librarians must stay up-to-date with fast-changing external technological environments as well as constantly evolving digital landscapes of their own working contexts. These requirements create greater demands on the depth and breadth of technical knowledge and skills required by public librarians (Thompson 2009, p. 3). The American Library Association Office for Information Technology Policy (2013) has recommended the development of DL competencies of staff as a priority for local libraries and as part of their wider mission (p. 2). Currently, there is lack of understanding of what professional development and workplace learning is required of public librarians in order to

engage communities in DL, and research literature in this area is scarce.

Standard professional development of librarians is the Masters' degree in Library & Information Science (MLIS); it is estimated that two-thirds of all public libraries have a librarian with an MLIS degree from an American Library Association-accredited institution (Institute of Museum and Library Services, 2015). After graduation, options for librarians to advance their knowledge and skills lie with their employer; continuing education can take place via professional associations, in-house training, or external online training providers. However, the diversity of public librarian roles in the increasingly complex technological environment calls for the provision of continuing education on a more systematic level. Staff development should be included in the mission statements and agendas for every public library, and library schools must ensure graduates arrive on the job with the required skillset.

Previous research indicates that there is a gap between the skills taught in many MLIS programs and the information technology skills expected by employers (Bosque & Lampert, 2009, Gorman, 2004, Singh & Mehra, 2012). Fortney (2009), for example, found that more "MLS programs should have a technology literacy component as part of their requirements and incorporate information technologies." Similarly, Singh & Mehra (2012) concluded that there was dissatisfaction among library students caused by the gap between the courses offered and the skills they need in their jobs; limited research exists of information technology representations in MLIS curricula.

Public librarians should be equipped with not only information technology (IT) skills, but also transferable DL skills. As Farkas (2006) suggested, emphasis should be placed on the need to teach students 'big picture' topics, such as "how to really be able to keep up with technology, make good decisions about its implementation, use it and sell it to others" (para. 3). The American Library Association Council (2009) has identified 'Technological Knowledge and Skills' as one of ALA's Core Competencies of Librarianship, competencies which all MLIS graduates should possess. These competencies include not only the understanding and application of "information, communication, assistive, and related technologies," but also other transferable knowledge, techniques and skills: understanding of "professional ethics and prevailing service norms", "methods of assessing and evaluating the specifications, efficacy, and cost efficiency of technology-based products and services" as well as the principles and methods for implementing technology-based projects (p. 3). In addition, public librarians should be prepared to develop in other areas, such teaching and instruction, leadership, collaborating, and building partnerships (American Library Association Office for Information Technology Policy, 2013, p. 2). For example, managing projects effectively requires "a basic understanding of the public policy process, management and leadership, budget and finance, and program evaluation" (Becker et al., 2011, p. 113). Promoting ideas/library services (Farkas, 2006) means working effectively with local communities and the ability to lead change is necessary for advocating the value of continuing education and life-long learning. Some of these skills are particularly

important as more public libraries participate in local and national initiatives and discussions on Internet policies, digital inclusion, broadband access and open data, acting as the link between underserved communities and the potential of the Internet (Beyond Access, 2012).

Research Aims and Objectives

The present study was conducted with the purpose of exploring the value public librarians assign to the development of IT and other transferable DL skills for fostering and supporting DI and DL in their communities. The research was conducted in four selected public libraries in North Carolina. The objectives of the study were: a) to understand the perspectives of public librarians about their roles in creating digital literate and inclusive communities; b) to examine the DL programs offered by selected public libraries, the IT and transferable skills required of librarians to run these programs, and the policies in place at those libraries for continuing professional development; and c) to examine a sample of the top MLIS programs in the United States in order to determine whether they adequately prepare librarians for DL IT and transferable skills.

Methodology

A qualitative multiple case study approach was selected to undertake this research, answering 'how' and 'why' questions within a real-life context, along with data collection from multiple sources of evidence that, according to Yin (2003), enable the

Table 1—Interviewers Details

Case study details	Date of Site Visits	Interviews Conducted
Case Study 1	December 18 and 20, 2013	Library Director (Interviewee 5) 1 Librarian (Interviewee 9)
Case Study 2	December 16, 2013 – January 14, 2013	Library Webmaster (Interviewee 1) 3 Librarians (Interviewees 2, 11 and 14)
Case Study 3	December 17, 2013 – January 13, 2013	Assistant Director (Interviewee 7) Library Systems Manager (Interviewee 4) 4 Librarians (Interviewees 3, 6, 8 and 13)
Case Study 4	January 7 and 9, 2014	Librarian (Interviewee 10) Digital Librarian (Interviewee 12)

triangulation of data. This approach included semi-structured interviews with 14 librarians and examinations of digital literacy professional development policies via documentation available within the participating libraries. All interviews were conducted on location at the libraries selected for this study between December 18, 2013 and January 14, 2014; each lasted an average of one hour. A total of nine public librarians and five library management staff were interviewed (Table 1). The interviews were recorded with a digital voice recorder, transcribed using the InqScribe software application, and coded and analyzed using NVivo 10 qualitative data analysis tool. Template analysis was used to code the data and draw out themes, based on the development of a flexible coding template where themes were presented in a mind-map, following the methodology suggested by King (2012) for starting with broader themes and successively creating narrower, more specific ones. The themes included the digital literacy needs of the public, most important IT skills, most important transferable skills, continuing education, obstacles to a digitally inclusive community, and gaps between library programs and the working environment.

In addition to the case studies of the four selected public libraries described above, the authors examined the status of a sample of the best MLIS programs (US News & World Report, 2013). This analysis was conducted in order to determine the extent to which recent MLIS graduates are prepared to effectively facilitate access to technology in their programming and help the public develop DL skills. The analysis included only general MLIS programs and excluded any specialized programs in information management, technology or architecture.

Through an extensive literature review and the interviews with the librarians, a list of seven IT skills (Table 2) and a list of seven additional transferable skills were generated (Table 3).

These skills were used as a basis for conducting an analysis of the titles and descriptions of specific course offerings within the selected MLIS that were relevant to the two broad areas of competencies (listed on the university websites). The courses were initially coded as 'IT' based, as long as they included at least one of the seven identified IT skills in the titles and descriptions. For example, a course titled

TABLE 2—IT SKILLS

- E-books
- Operating systems (Microsoft windows, Mac OS) and software applications (Word, Excel, PowerPoint)
- Web design
- Social media platforms and emerging technologies, Blogs and Wikis
- Basic PC trouble shooting
- Online research skills (i.e. information retrieval)
- Database design, management and concepts

Web Technologies Techniques was included in the analysis in relation to preparing students for web design; this was confirmed in the course description. No distinction was made between core and elective courses or the number of times the course was offered, and each course could be labeled for several skills.

Results and Discussion

For the purposes of this study, general pseudonyms (e.g. Public Library 1) were used for the four participating libraries. The following discussion presents a synopsis of existing library DL programs and staff training policies in relation to digital literacy and inclusion. This is followed by an analysis of the MLIS programs.

Case Study Results

Public Library 1 had a partnership with a library school and provided a series of classes and workshops on using computers, the Internet, Microsoft Office, file organization, online job searching and résumé writing, online health information, E-books, and social networking. These were taught and designed by library students, while the library managed registration and promotion of the classes. There were also Open Lab sessions where patrons could come in with individual questions and get one-on-one assistance. The most current Library Information Technology Plan was from 2003 to 2007 which described the training of librarians as lacking and the number of staff as inadequate. There was emphasis on providing staff with appropriate technical skills to satisfactorily perform their jobs and to serve the public, yet no specific policies in regards to digital literacy and inclusion were identified.

Public Library 2 offered a variety of classes for the public (e.g. computer classes covering email, Web, Microsoft Word and Internet basics) and some of the classes were taught by students of the library school in the area. The library's DL and DI policies (covering 2007-2010) included providing its residents with information technology resources through ample access to computers and technology training, and the library kept up-to-date with emerging technologies and also had partnerships with high-tech organizations in the community. Staff training was therefore a high priority. Competencies in information and technology-related communications were emphasised for all staff positions and all staff members were expected to be competent with PC and Web-based

Table 3—Transferable Skills

- Library/technology teaching instruction
- Communication
- Management
- Evaluate & assess programs and library services
- Public policy, community outreach & inclusion, engaging stakeholders
- Budget & finance
- Marketing

applications.

Public Library 3 offered classes on Microsoft Office which were taught by students from the library school in the area as well as other classes that covered information resources on career, government, and health information. The library sought to carefully evaluate emerging technologies in order to meet the community's needs and it had a partnership with the County IT department to guarantee maximum public access to hardware and software. The library also worked toward creating a technology team to assess new technologies and devices for integration into the library. The strategic plan of the library from 2013-2016 identified two priorities centred on community connections and technology tools and training. The library sought to expand collaboration with local organizations and other county departments, and also raise awareness of library services in the community. Ongoing training opportunities for library staff were of high importance.

After contacting several administrators and searching the library's website, it was impossible to find the strategic plan of Public Library 4. There was no mention of any type of policies in regards to DL training of staff. The library offered a variety of classes ranging from PowerPoint and eBooks to help with job searching websites, online applications, and preparing resumes and cover letters. Computers were available and could be accessed to use the Internet, Microsoft Office, and electronic research resources.

INTERVIEWS WITH LIBRARIANS

The librarians who took part in the research considered teaching and instruction a very important aspect of their profession and they emphasized helping the public to become self-sufficient in terms of technology skills that are "key and important to their lives" (Interviewee 6). A wide range of DL training was offered but four categories were mentioned consistently: e-book training (i.e. accessing and downloading Overdrive eBooks), basic computer and office software skills (e.g. how to start the computer, use the mouse, use Microsoft Word and set up email), assistance with on-line forms (such as job applications, health care and government forms), and accessing and using electronic database resources. Much of this training was aimed at older people as "they're suddenly confronted" with "an advance of social expectations and work expectations…there might be a stigma to not being wired" (Interviewee 2). However, interviewees agreed that a lot of people with different demographics still need "general computers skills," especially help with filling in online job and government applications. They described this as "an immediate need" affecting people's well-being (Interviewees 3, 14). Participants also mentioned the use of online social media: "Social media is huge, that is a need. People have a need to be social, how do they do that, how do they set up a profile, how to load pictures" (Interviewee 13).

The interviewees identified a number of obstacles in the way of a more digital inclusive community including library priorities, outreach problems, lack of resources (e.g. technological, financial) but also disagreement "regarding technology literacy as a role/goal of libraries" (Interviewee 12) and lack of systematic analysis of users' needs or a

"deep plan…to go after specific groups that may be digitally excluded now" (Interviewee 5). The importance of well-coordinated communication efforts was highlighted as an essential component in the teaching of digital literacy and overall emphasis was placed on devising clear and well-developed marketing and communication strategies (Interviewee 7), the development of a unified strategic approach to connecting with different groups in the community, and investing "in that level of communication" (Interviewee 4). One of the participants felt that, although a good start had been made to draw national attention to the issues of digital inclusion, the presence of "the have and have not's…is going farther and farther apart" (Interviewee 3). For example, the government making a decision to go paperless may wrongly assume that the problem of digital connectivity has already been resolved: "part of it is just a mind-set, where the people making decisions assume that everyone in the community is operating at an equal level of digital access" (Interviewee 8).

The library managers interviewed had the expectation that especially new recruits had developed at least a basic level of IT skills that enabled them to adapt to different technologies and platforms rather than just focusing on knowing a specific type of software (Interviewee 3). However, the librarians expressed that MLIS programs were not successful in providing them with the digital literacy skills required for their job. The current MLIS programs were not teaching enough technology skills, and those being taught were often out-of-date. The technological skills they acquired (such as web programming, design and development, and general technical support) were mostly self-taught or had been learned on the job (Interviewees 1 & 6). One participant even questioned the need for librarians to have an MLIS and wondered if there is an equivalent experience or skill set that would provide the same outcome: "I think that a long term conversation needs to be had about the return of the investment of a graduate level program for this type of work" (Interviewee 5). The librarians highlighted a range of different IT skills, from basic technical support and troubleshooting to searching/online research skills. They also required knowledge of mainstream operating systems and office software, social media platforms (including the interpretation of social media statistics for outreach), current technology news, and eBooks (Interviewee 12). Other skills deemed important included basic web and database design and concepts as well as advanced online researching.

The librarians interviewed considered the acquisition of transferable skills equally important. These skills included the management of digital literacy programs (e.g. budget and finance aspects), the communication with external stakeholders for the purposes of outreach and collaboration, and an overall understanding of community needs and public policy issues. Another transferable skill the librarians highlighted was the ability to communicate with the public. They defined this as 'people skills' and the ability to make individuals feel at ease (for example during digital literacy sessions). The interviewees also highlighted the need to understand the community and know how to reach to particular segments of the community (e.g. the unemployed, older people) as a critical

transferable skill. In addition the interviewees identified MLIS programs as the venues in which instruction skills and methods should be taught. Finally, knowing how to design and assess programs for the community was considered, by some, essential. One of the interviewees explained that MLIS programs lack sufficient practical experience and enough emphasis on users, "Really understanding who the patrons are who come in the door. It is one thing to theorize who they are and it is all very idealistic but there is a gap with really seeing a homeless person come in and ask some questions" (Interviewee 13).

Another interviewee placed importance on evaluating the effectiveness and impact of a digital literacy program. This would involve a number of transferable skills which could be taught at library school: "…working with data, setting performance measures, knowing how to create measurable outcomes and using those to translate into effective storytelling…we don't always have the language to evaluate what we have done to say whether or not it is worth continuing investment" (Interviewee 4).

All participants agreed that continuing education is very important and that it should be a priority with library management. Nevertheless they expressed that in their libraries there was not enough formal training for all employees. Some participants managed to keep up with current developments on their own by following blogs, reading professional journals or attending free webinars. Others felt that priority was mostly given to employees who lacked basic digital literacy skills but insufficient attention was given to the development of librarians who are already perceived as technologically savvy: "…having been in the position for 15 years, I don't do much and you lose it, like a language" (Interviewee 9). Another interviewee felt that there was not sufficient formal training available in their library and when there was, it was highly dependent on the different supervisors and what they specifically required of their employees (Interviewee 11). Another participant felt that continuing education for librarians is not evolving fast enough. They thought most of their training should depend on specific job requirements and library priorities, but the training they received had not been about library skills, but rather about employment matters such as dealing with co-workers and sexual harassment (Interviewee 14). Despite that in one of the public libraries there were plans for developing and finalizing "core competencies for all staff" and "drill[ing] down a little bit more on what the idea of technological competency or digital literacy means" (Interviewee 5).

The perceptions of librarians around the development of DL IT and transferable skills provided a rich ground for the analysis of the MLIS programs. It was important to also examine more systematically the degree to which these programs prepared newly qualified librarians to enter the digitally complex environment of the public library. Therefore MLIS programs were analysed in order to assemble an overall picture of the current DL education within these areas.

Analysis of MLIS Programs

By combining the findings of the structured librarian interviews with the results of an

extensive literature review, the authors generated a list of IT skills (Table 2) and transferable skills (Table 3). A total of 118 courses offered across the 20 MLIS programs were based on at least one of the seven identified IT skills. Table 4 presents the number of IT courses offered in the MLIS programs of each university, the frequency of all the competencies identified within the courses labeled as IT, and the total number of IT skills taught out of the seven identified competencies within each university. The courses which were labelled as 'IT courses' were assessed against the seven listed IT skills which resulted to 156 incidences of these skills found across all the courses (one course could focus on several skills). The number of IT courses is arranged from highest to lowest.

This analysis showed that the number IT skills varied substantially across the schools. The University of Illinois had the highest number of IT courses taught (14), followed by the University of North Carolina (12) and the University of Michigan (11). At the University of Illinois, IT skills appeared 18 times in course descriptions and five out of seven of the identified skills were addressed in the courses (for example e-books is not

TABLE 4—IT COMPETENCIES TAUGHT IN MLIS PROGRAMS

University	**Number of IT courses**	**Overall Frequency of IT skills**	**Number of skills listed**
University of Illinois	14	18	5
University of North Carolina	12	14	6
University of Michigan	11	14	5
Drexel University	10	13	5
Florida State University	7	8	5
University of Texas	7	8	4
Kent State University	6	10	5
Syracuse University	6	9	5
Rutgers University	5	5	4
University of Wisconsin Milwaukee	5	5	3
Indiana University	4	4	3
University of Alabama	4	7	4
University of Pittsburgh	4	6	4
University of South Carolina	4	8	5
University of Tennessee	4	6	3
University of Wisconsin Madison	4	7	4
Simmons College	3	5	5
University of California	3	4	3
University of Maryland	3	3	2
University of Washington	2	2	1

one of the competencies taught).

The highest number of IT skills taught was found at the University of North Carolina (6) while the lowest number was found at the University of Washington (1). Some schools only offered two or three out of the total number of the seven identified skills.

Further analysis demonstrated the emphasis given to particular IT competencies in the programs, revealing clear gaps in specific areas. Table 5 demonstrates that operating systems and software applications, web design, database design and online research skills and resource evaluation were the areas mostly taught in schools. Surprisingly, however, basic PC trouble shooting and e-books were the two areas that were taught the least. In addition, not as many schools offered evaluation and social media platforms and emerging technologies.

A total of 139 courses were coded as non-IT courses in the MLIS programs offered by the different universities containing the transferable skills identified in this research study. Table 6 demonstrates that 213 incidences of skills were found across all the courses (as previously one course could focus on several competencies); it also shows the overall frequency of transferable skills identified in the MLIS programs of each university and how many out of the seven competencies were taught. The University of Illinois had the highest number of non-IT courses (26), followed by the University of Maryland (9) and the University of Pittsburgh (11). At the University of Illinois there were 37 occurrences of transferable skills and all of the seven identified skills were present. This was also the case with the University of Wisconsin at Milwaukee and the University of Pittsburgh. The lowest number of transferable skills (2) was taught at the University of South Carolina. In addition, some schools only offered courses that

TABLE 5—FREQUENCY OF SPECIFIC IT SKILLS

IT skills	**Number of incidences**	**Number of schools**
E-books	0	0
Operating systems (Microsoft windows, Mac OS) and software applications (Word, Excel, PowerPoint)	36	18
Web design	33	16
Social media platforms and emerging technologies, Blogs and Wikis	19	10
Basic PC trouble shooting	4	3
Online research skills and resource evaluation	27	15
Database design, management & concepts	37	18

focused on two or three skills only.

A further analysis of these specific competencies showed that management skills and skills covering public policy, community outreach, inclusion, and engaging stakeholders are covered in the schools. On the other hand, communication skills were only taught in 6 out of the 20 schools. In addition, less emphasis was given to technology instruction and marketing (Table 7).

DISCUSSION AND CONCLUSIONS

The findings from the interviews provided an insight into a set of DL skills that were considered important by librarians. The

TABLE 6—TRANSFERABLE SKILLS TAUGHT IN MLIS PROGRAMS

University	Number of non-IT courses	Overall frequency of transferable skills	Number of skills listed
University of Illinois	26	37	7
University of Maryland	9	13	6
University of Pittsburgh	9	14	7
University of Texas	9	16	6
University of Washington	9	15	6
Florida State University	8	9	5
Rutgers University	8	8	6
University of Alabama	7	10	5
University of North Carolina	6	9	5
Indiana University	5	8	4
Syracuse University	5	8	5
University of Michigan	5	6	4
University of Tennessee	5	10	6
University of Wisconsin Milwaukee	5	10	7
Drexel University	4	8	6
Kent State University	4	10	5
Simmons College	4	5	5
University of California	4	5	3
University of Wisconsin Madison	4	8	5
University of South Carolina	3	4	2

development of IT skills encompasses different communication media and tools such as e-Books, online databases and social media platforms. The provision of e-Books in particular has attracted a rising interest in the last few years with the majority of public libraries in the United States offering free access e-Books to library patrons. This has been one of the most remarkable changes in patrons' borrowing habits and the increasing popularity of e-Books means that library staff now spend more time on technology support and instruction (e.g. helping with devices, downloading e-Books). Patrons expect public librarians to be knowledgeable on all mobile devices, and eBook readers. This creates many challenges in terms of keeping up with an ever changing technology and it raises the need for developing more hands-on and systematic training programs for library staff (Zickuhr & Smith, 2012).

Basic IT skills, including knowledge of operating systems (Microsoft windows, Mac OS) and software applications (Word, Excel, PowerPoint) are also essential for assisting patrons with using public access computers; however this is a challenging area as IT "can include anything from keyboards and mice to troubleshooting a host of computer problems … vary in age and composition, come from a range of vendors, run different operating systems, and often have different application software versions" (Bertot, 2009, p. 84).

The most important finding of this study, however, is that the ability to teach DL requires skills beyond knowledge of the technology, embracing additional transferable skills that should not be considered as secondary. For example, designing a website requires understanding of privacy policies and intellectual freedom. Teaching the functionality of operating systems and applications requires creating a comfortable atmosphere for learners who may be intimidated by the technology and embarrassed by their lack of knowledge (Thompson, 2009). Technology instruction implies knowledge of the latest technological trends but in order to convey this knowledge an understanding of

TABLE 7—TRANSFERABLE SKILLS

Transferable skills	**Number of incidences**	**Number of schools**
Library/technology instruction	19	14
Communication	9	6
Management	46	20
Evaluate & assess programs and library services	33	16
Public policy, community outreach and inclusion, engaging stakeholders	59	19
Budget and finance	27	16
Marketing	20	14

pedagogical issues and teaching methodologies is essential.

Similarly, the development of technical online research skills (i.e. information retrieval) is important for effectively sourcing different types of healthcare, government and employment information, yet without critical evaluation skills, technical knowledge will not suffice. A technical understanding of social media functionality and awareness of the latest technologies and trends are paramount but, in order to maintain high visibility in information services, communication and marketing are essential transferable skills for outreach, e.g. engaging with patrons and other stakeholders as well as building partnerships with local organizations. In addition, an understanding of public policy at local, regional or national level is important for developing awareness of digital literacy community needs, for utilising existing support resources, for discovering potential partners, and for sourcing and securing available funding for digital literacy programs. Finally, in order to evaluate the impact of digital literacy programs and developing comprehensive and useful digital literacy services for the community, public libraries require a systematic collection of user data. This requires data analysis skills but also communication skills for translating these data into useful information for the purposes of external funding.

MLIS programs play a big role in providing public librarians with the skills they need to become knowledgeable in how to assist the public with their digital literacy needs. Through our analysis we found that the strongest areas of IT competencies in these programs include operating systems, software applications, web design, and database design. Our research study demonstrated that extensive progress has been made towards preparing librarians in regards to overall IT competencies since the findings of earlier research (such as that of Fortney, 2009), calling for MLIS programs to incorporate a stronger emphasis on technology literacy and information technologies. However, more work is required in specific areas such as e-Books and general PC troubleshooting as these are not given sufficient attention in current programs. It therefore appears that the most basic and practical competencies are missing from the MLIS curriculum.

In 2013, the American Library Association Office for Information Technology Policy (2013) recommended that, in order to support library engagement in digital literacy efforts, "Programs should require classes in instructional design and educational pedagogy so that new librarians are best prepared to work with learners in formal education settings, as well as the public sphere" (p.2). However, our research has shown that technology instruction skills are lacking among the transferable skills. More work is required in the development of interpersonal skills and particularly in helping MLIS students to develop stronger communication.

Public libraries and MLIS program coordinators need to work together to reevaluate current MLIS programs in terms of DL and transferable skills, in order to make these programs more comprehensive and responsive to current needs. Professional organizations that accredit the programs should continually evaluate the

curriculum of the MLIS programs and steer them in a direction that will allow for public librarians to be better prepared to serve the public's digital literacy needs. This sentiment was also found in the earlier literature (Farkas, 2004, Gorman, 2004). However, it is understood that not all skills can be acquired through an MLIS program, especially with evolving technologies, and therefore public libraries and public librarians should make continuing education a top priority. The library profession needs to make sure that new librarians are prepared for leading digital literacy programs and that those already employed should receive training in this role that will support their professional development. Thus, "as required by ALA standards for Accreditation, MLIS education programs should actively foster a culture of continuous learning and curiosity" (American Library Association Office for Information Technology Policy, 2013, p. 2).

Finally, it is important to continue evaluating MLIS programs and examine whether they actually provide these skills to new graduates. The training of new librarians can be challenging and should be re-evaluated and assessed frequently.

Recommendations and Future Research

The findings of this study suggest several recommendations. In order for public libraries to continue to take the lead in developing digitally inclusive and literate communities they have to be able to show concrete policies and plans for the development of their staff addressing the DL IT and transferable skills explored in this study. Even though the awareness and importance of continuing education is present, systematic training appears to be lacking. Therefore it is recommended that all public libraries create a strategic plan with set policies in regards to staff digital literacy and inclusion training.

MLIS programs should offer hands-on, practical technology classes and training on subjects that will provide the future public librarian with transferable skills that are essential for fostering partnerships with the community, such as, communication, outreach, and technology instruction. MLIS students could also complete an internship/ placement before graduating so that they will be better prepared to face some of the issues that are characteristic of public libraries and digital literacy and inclusion.

Several areas relating to the development of IT and transferable competencies of public librarians deserve further research investigation. For example, it would be valuable to examine, in more detail the impact of particular demographics (such as age, gender and graduation date). Furthermore, in several public libraries not all library staff who deal with the public and help them develop digital literacy are qualified/trained librarians. It would therefore be interesting to compare the competencies of different library staff working at different levels. In addition, it would be valuable to talk to MLIS program coordinators and directors to explore these skills in core versus elective requirements of the programs, examine the kinds of coursework available and how it address these skills, as well as investigate the work related experience requirements for entry to the programs (if any) and the pre-employment work experiences that are

generally being offered by MLIS programs (e.g. internships and internship placement assistance). These could shed further light into how the identified skills in this research could be integrated effectively into the MLIS curriculum.

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