DH Eh? A Survey of Digital Humanities Courses in Canadian LIS Education

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Library and librarian involvement in digital humanities (DH) has grown over the past few years. However, it is unclear whether current library and information studies (LIS) programs are properly preparing students for this type of work. This study analyzed course offerings at Canadian ALA-accredited LIS programs. While Canadian ALA-accredited LIS programs offer DH-relevant courses, the number of courses offered and their range/scope vary greatly among institutions. Although many are teaching the technical skills required by the field of DH librarianship, collaboration and project management training remain elusive in most programs.

Introduction

The popularity of digital scholarship in the humanities, or DH, has undeniably made its way into the academic library, with many scholars reporting on the benefits of doing DH research in collaboration with librarians. DH can be defined as "a field of study, research, teaching, and invention concerned with the intersection of computing and the disciplines of the humanities."[1] The academic library is often a hub for DH research, as it is a unique space on campus that can easily foster interdisciplinary research; this position within the university creates effective conditions for a discipline that depends on collaboration for success. Libraries also usually host the materials (primary sources in both digital and print format) and technologies (computers and software) that make DH work possible.[2]

Academic libraries have responded to the need for DH support by creating DH librarianship roles to better serve their communities and meet their users' needs. For this reason, job postings for positions such as Digital Scholarship Librarian and Digital Humanities Librarian are becoming more frequent.[3] A recent study analyzing the content of library DH job postings found a drastic increase in job postings between 2015 and 2017.[4] These roles may differ from data or digital librarians in that they are not just concerned with the curation, preservation, and management of digital objects (although that may be part of their responsibilities). The DH librarian might also facilitate the research process for DH projects through consultation and project management support, provide support to academics and researchers by understanding the theory of DH, and be knowledgeable about the tools and methodologies that are available to DH scholars. Most importantly, faculty should perceive DH librarians as potential collaborators

and research partners. While the literature on DH and academic librarianship has identified the skills that are most needed for DH librarianship, very little has been written about how to best prepare library and information studies (LIS) students for these jobs. While there have been studies about DH education in general, less is known about DH in LIS programs. A recent study by Sula and Berger focused strictly on DH courses taught in LIS schools, but it did not focus on the content of the courses.[5] Meanwhile a study by Walsh et al. did analyze course content through course descriptions and syllabi in iSchools but focused only on courses where the title included the words "digital humanities,"[6] an approach that, in addition to excluding non-iSchool programs, could potentially exclude courses working with specific methodologies or tools. To better understand the status of librarian education and DH within the Canadian context, the authors conducted a survey and analysis of all eight American Library Association (ALA) accredited study LIS programs in Canada and their course curricula to determine whether the course offerings in these programs prepare students for a career in the digital humanities.

Literature Review

DH librarian responsibilities are difficult to define given that DH is a growing and rapidly evolving discipline. The combination of emerging technologies and methodologies and varying levels of staffing and financial resources across academic libraries means that the skills and requirements laid out in job advertisements for DH librarians may look different at every institution.[7]

According to Tanya E. Clement and Daniel Carter, specialists are usually trained academics who support research using digital methods or tools.[8] Some institutions have large centers or laboratories dedicated to DH, while other libraries designate the workload to individual librarians. DH librarians may be expected to have experience or education that will enable them to both support, and work with, faculty and students on DH projects. In institutions where DH work is decentralized, subject or liaison librarians may find themselves engaging in DH work as well.[9] DH support work is also increasingly being done by non-librarian staff. Many DH graduates seek work in DH centers, laboratories, and libraries. Increasingly more humanities instructors are incorporating DH methods and tools in their undergraduate and graduate courses as a way to increase their students' job prospects.[10] The same enthusiasm to train future DHers is not prevalent in the LIS literature.

Collaborator versus Service Provider

DH librarianship offers a unique path for LIS students who aspire to grow and continue their research skills throughout their career. Many scholars argue that DH should challenge us to reimagine the role of the librarian in the research process. Nowviskie discussed this issue in her talk-turned-blog post, "A Skunk in the Library," in which she states that librarians have an opportunity to become more than service providers: libraries should see their "obligation to the digital humanities community as being less about the provision of smooth and reliable services and more about modeling the digital humanities being done right for traditional faculty and grad students."[11] Muñoz also argues that DH in the library can be more than a service that is provided; it can be an opportunity to share ideas.[12]

If a librarian is expected to be an equal partner in the DH research process, then they should have some experience conducting DH research. Posner argues that DH expertise is "best learned through participation in actual DH projects."[13] Cunningham argues that DH

projects have the potential to change "traditional research culture," and that librarians should seize the opportunity to use DH as a way to foster better relationships with faculty.[14] Librarians who have both expertise and experience with DH research, including its theories, tools, and methodologies, may be more prepared to contribute to a DH project in its entirety, thus challenging the misconception that they are just service providers.

In light of this, LIS students may benefit from courses that explore the different shapes the role of librarian could take, as well interdisciplinary collaboration.

Digital Humanities Skills and LIS Education

DH projects involve many different types of tools and methodologies but may be divided into two categories: first-order projects and second-order projects.[15] First-order content refers to the digital re-creation of an existing object without analyzing it. For example, a first-order project could be digitizing a print text. Second-order content refers to the application of digital tools or methodology to critique or analyze. For example, a second-order project could entail encoding the digitized text using a markup language such as Text Encoding Initiative (TEI) or performing a textual analysis on the text. There is also the distinction within second-order content between projects that are built using an existing software or ones that have been custom-built.[16] For example, a project using Voyant, a web-based text analysis tool, requires minimal experience with programming, whereas a Jupyter Notebook project that uses Python language to create a script for text analysis would require familiarity and experience with coding. Librarians may be expected to help researchers with both of these types of DH projects, which demand varying skill sets.[17]

Given the many different skills that may be required for a successful DH project, it is unlikely that one librarian on a campus will be responsible for supporting every aspect of DH work. For example, there may be other units or people on campus that support DH projects including archivists, information technology analysts, developers, and students. However, DH librarians should have a foundational understanding of DH tools, methodologies, and project development in order to be able to consult with DH practitioners. Bonds argues that familiarity with tools and their use cases is important for consultation work.[18] As King states, training in DH tools and methodologies "can enable [DH librarians] to frame the questions and lead the projects in the field of digital humanities, rather than solely supplying researchers with the resources needed to do their isolated work."[19] These tools and methodologies include, but are not limited to, textual analytics and text mining, data mining, information visualization, TEI and markup languages, digital exhibit software and platforms, and knowledge of programming languages.[20] Coincidentally, Poremski's study found that "technologically advanced skills (digital mapping, text encoding, and computer programming) are most often lacking in the current digital librarians' skill set."[21] The challenge for new LIS graduates is that most of these skills are specialized, yet they are often expected of DH librarians.

In addition to knowing how to apply digital tools and methodologies, DH librarianship work might also include outreach, capacity building, and instruction.[22] Poremski's study on DH librarians found that outreach, project management, and teaching were the top three areas of duties for them.[23] Many DH librarians also offer workshops and lectures on DH tools and methodologies, prepare LibGuides, and support instructors who want to incorporate DH into their courses.[24] Russell and Hensley argue that DH instruction involves not only showing someone how to use a tool but also encouraging students to think critically about their

research question and the data they select for their project.[25] LIS students would therefore benefit from learning how to use a tool and also how to teach it.

LIS education has been slow to address the need for these skills in the academic librarianship job market. In a 2017 survey, Poremski identified important gaps in the training and professional development of DH librarians.[26] The survey asked librarians where they had acquired the skills relevant to their DH library jobs. Ninety percent of participants indicated they had learned them on the job, and only 29 percent mentioned their LIS program. Furthermore, studies by Zhang et al., as well as by Sula and Berger, revealed the paucity of DH courses or training in most LIS programs.[27] While the rise in DH librarian positions and the high demand for DH-relevant skills is fairly recent, the LIS field has been aware of the impending need for training in this area for a while. In 2011, Geoffrey Little asked if the iSchool caucus would demonstrate leadership in this area and adapt student programs to meet this growing need for DH training for librarians;[28] the authors of this study sought to find out whether or not the Canadian LIS programs have met this challenge.

Methodology

For this study, the authors examined the curricula information available on the websites of all eight American Library Association–accredited LIS graduate programs in Canada (Dalhousie University, McGill University, Université de Montréal, University of Alberta, University of British Columbia, University of Ottawa, University of Toronto, University of Western Ontario).[29] The study focuses on individual course offerings in Masters in Library and Information Studies/Sciences, including joint programs like the Master of Digital Humanities and Master of Library and Information Studies at University of Alberta.

The information was originally collected in 2019 and was revised and updated in the fall of 2020. Courses were analyzed to determine if they were relevant to DH. In order to be considered relevant to the digital humanities, course titles or descriptions had to include related tools, theory, or methodologies. For those selected the following information was collected:
- number and title;
- course description;
- whether it was a required course;
- whether it was offered by the LIS program or another unit at the institution.

The authors had originally collected information on whether the course was delivered in person or remotely, but the COVID-19 pandemic shifted all courses to remote delivery. While some institutions allow students to take courses outside of their departments, these were only included if they were listed on the programs' course webpages. No PhD courses, practicum courses, or independent/directed studies courses were included.
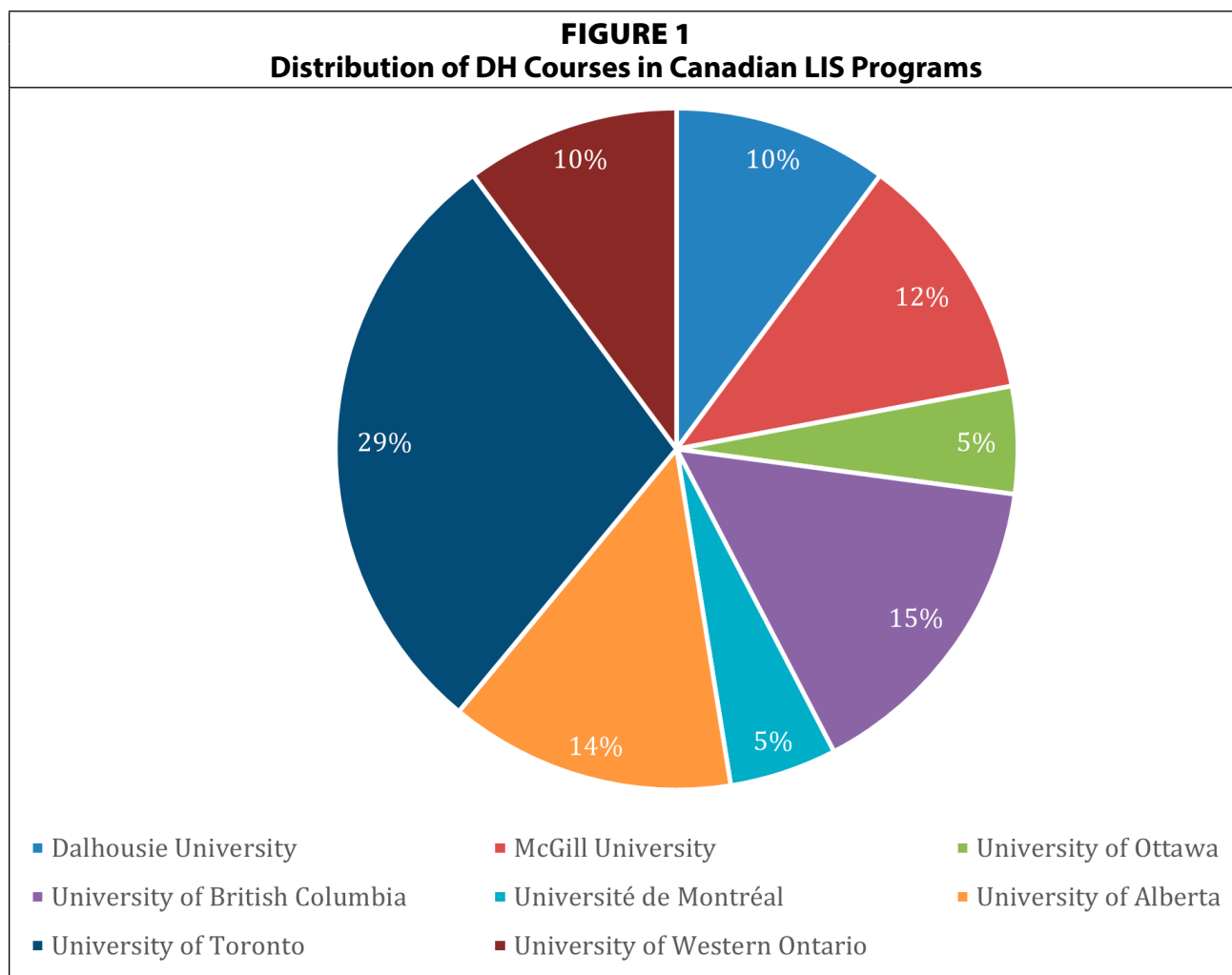
Once data collection was completed, each author used the course title, description, and syllabus (if available) to assign each course to one or more of the following categories: DH Theory, DH Tools and Methodologies, and Data Management. DH Theory is defined as any course that explicitly addresses the theory of digital humanities or related theories, such as distant reading or computational thinking. Courses marked in the DH Tools and/or Methodologies category may implicitly or explicitly address DH contexts and are focused on teaching the application of DH Tools such as text mining or text analytics, GIS data, data visualization, exhibits and content management, text encoding and markup languages, or web design. The Data Management category is the broadest and consists of courses that

provide skills that would be considered useful in a DH context, specifically pertaining to organizing, classifying, and managing data. These course descriptions do not directly address DH. This category consists of courses that focus on metadata, digital libraries, data mining, data science, digital curation, and database design. In the case of courses on topics that could also be considered part of regular librarianship such as database design, metadata, and web design, the authors chose to only include those that showed a direct connection to DH tools, theory, or methodologies.

After independently assigning categories to each course, the authors shared their lists and discussed any differences in their assessments. Course descriptions were also used to identify recurrent themes and technologies.

Results

There was a total of fifty-nine DH courses across the eight institutions analyzed. While all institutions had at least one course on the subject, courses were not evenly distributed among all the institutions. University of Toronto's iSchool was responsible for 28.8 percent of the courses with seventeen offerings. Furthermore, there were another nine courses, and while they did not meet the criteria to be considered for this study, they were complementary to the DH courses offered at the institution. The rest of the programs analyzed were responsible for 5–15 percent of the courses each as shown in the graph below (figure 1).

FIGURE 1
Distribution of DH Courses in Canadian LIS Programs

- Dalhousie University
- McGill University
- University of Ottawa
- University of British Columbia
- Université de Montréal
- University of Alberta
- University of Toronto
- University of Western Ontario

None of the courses analyzed were required courses, and most were taught by the LIS department/school. The one exception was the University of Alberta, which has a joint MA/MLIS program in DH. In this case some of the courses are offered by the English or Humanities Computing departments.

The majority of the courses that qualified for this study fell under the "Data Management" category, with 47.5 percent (twenty-eight) of the courses being related to courses that focus on metadata, digital libraries, data mining, data science, digital curation, and database design. This was also the only category of courses that was present in all eight institutions. The second most popular category was "DH Tools," with seven institutions having courses featuring tools for text mining or text analytics, GIS data, data visualization, exhibits and content management, text encoding and markup languages, or web design. These courses make up 33.9 percent (twenty) of the total courses. Finally, the category "DH Theory" only made up 18.6 percent (eleven) of all courses and was only present at five institutions, as seen in figure 2.

**FIGURE 2**
Distribution of Courses by Category
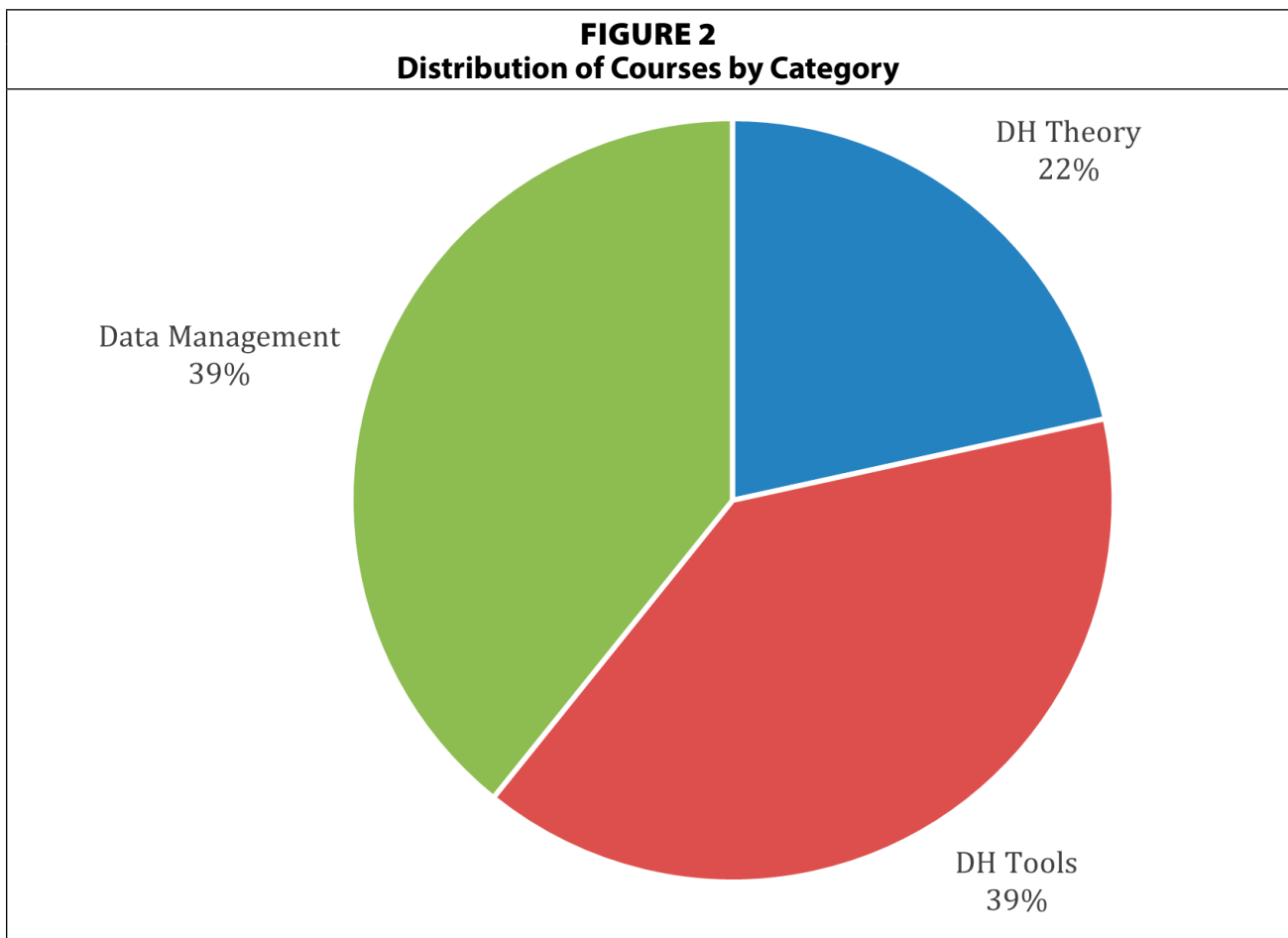
In the DH Tools category, data visualization tools were the most popular theme being present in seven of the twenty courses. Tools mentioned included Tableau, Matplotlib and Plotly. Programming or markup languages were present in five courses, focusing mainly on Python but also including R and XML. Other themes present were tools and methodologies for text analysis, digitization and preservation, GIS, content management, and digital storytelling.

Among the DH Theory courses the most prevalent themes were theoretical approaches to humanities computing/DH, computational thinking, and digital media. Other topics present were more advanced, such as Social Media Intelligence and blockchain.

As the most popular category, Data Management also contained the highest number of themes. As seen in figure 3, courses on the overall management of data were the most popular, followed by those dealing with metadata. The following themes were also present in several courses across the different institutions:

- data science,
- data librarianship,
- data preservation,
- data discovery,
- and data-related project management or workflows.

FIGURE 3
Prevalence of Data Management Themes by Number of Courses
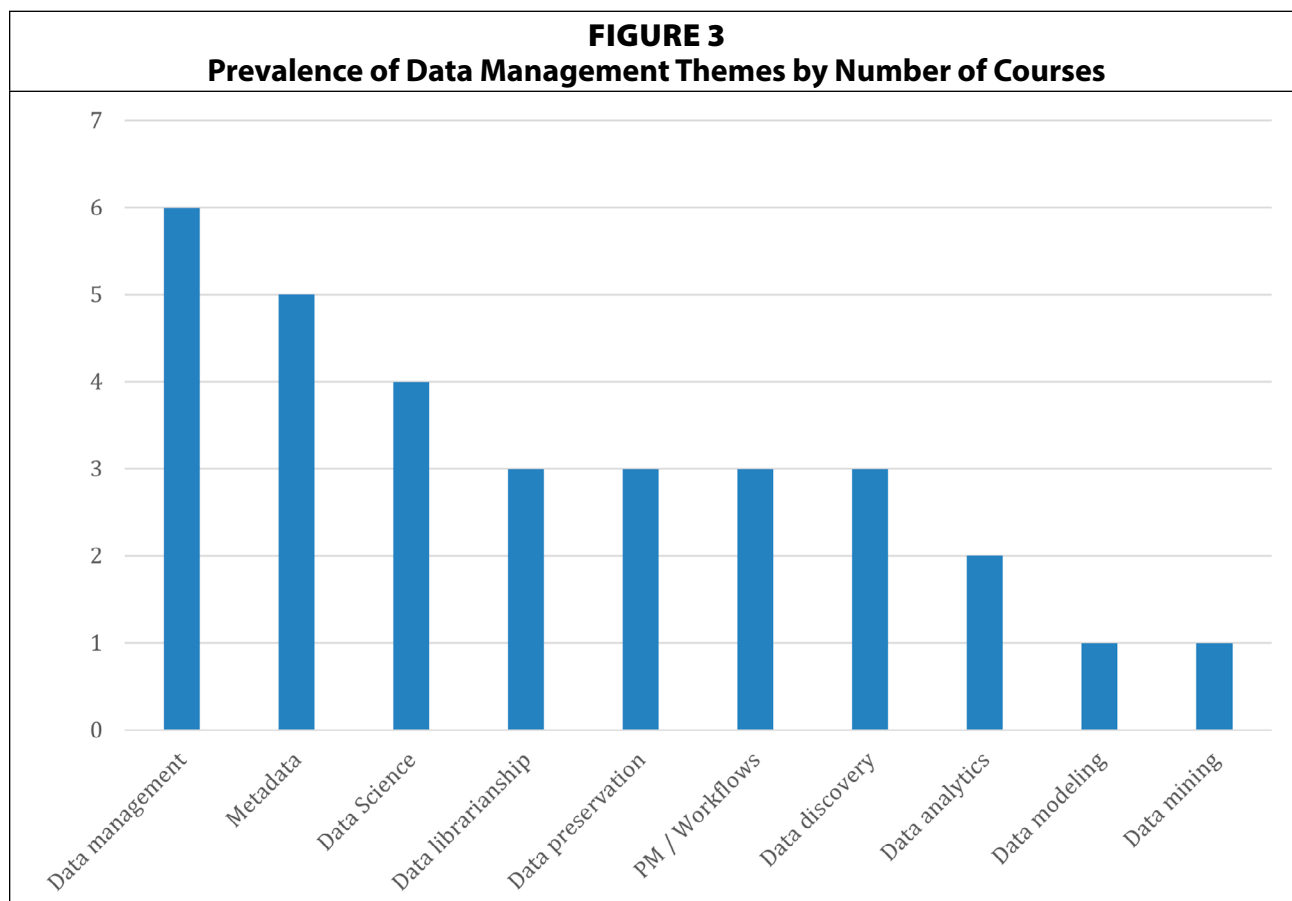
Conspicuously missing from almost the entire dataset with the exception of three courses were mentions of collaboration or project management skills.

Limitations

Most university websites offer a general list of their course offerings and do not specify which courses are being regularly taught. They may also not be updated regularly, which means that courses no longer being taught might also be listed. The length and depth of course descriptions may also limit this study, as they vary in brevity and scope. For example, most of the LIS schools offer foundational courses that give a broad introduction to topics such

as information organization or information behavior. Furthermore, courses labeled "Special Topics" often do not include information about the special topic itself but rather about the structure of the course.

Discussion

Students who attend Canadian LIS programs may expect to gain skills in their Master's program that will successfully prepare them for future jobs as Digital Humanities Librarians. According to the findings of this study, their ability to accomplish this will be highly dependent on the institution they attend, as the amount, range, and scope of DH-relevant courses varies highly by institution. While all institutions offer at least a few elective courses on data management topics such as metadata, digital libraries, data mining, data science, digital curation, and database design, DH-specific courses are less prevalent both in terms of how many institutions offer them and the number of courses they offer. This may cause a problem for certain graduates as they may find themselves less prepared than some of their counterparts at other institutions. However, the authors did see an increase in the number of DH-specific courses taught in Canadian LIS programs throughout the data collection period. Furthermore, 87.5 percent of Canadian ALA-accredited LIS programs offer at least one strictly DH course. Meanwhile the number for all ALA-accredited LIS programs regardless of location is 32.3 percent.[30]

A recent content analysis of DH-related library job postings identified data visualization, text mining, image analysis, augmented reality, programming/markup languages, GIS, and DH-related standards as desired skills.[31] With the exception of image analysis and augmented reality, the authors found that Canadian LIS programs as a whole did cover these skills. However, there is a lack of courses that contextualize librarianship within the context of DH or DH-related roles. While the teaching of tools is important, institutions should keep in mind that technology changes fast and addressing the role of the librarian in DH may aid future professionals in adapting to these changes. Much the way LIS programs have developed courses on data, law, or children's librarianship, DH-inclined students could benefit from having a course dedicated to this specific type of librarianship, particularly as it pertains to collaboration. As Posner explains, the majority of the courses currently offered do not necessarily prepare students to be collaborators on DH projects,[32] which may leave new graduates unsure of their place within the DH ecosystem. If capacity were an issue for LIS programs, a potential solution to this problem would be to engage in partnerships and collaborations with DH centers, programs, and organizations. However, institutions should not rely solely on internships and practicums because the quality and quantity of instruction may be uneven across cohorts.

Project management is another area that is often ignored by Canadian LIS programs. Project management has been identified as the most in-demand skill for DH-related positions.[33] While the authors identified three courses related to project management or workflows, they were mostly related to data management. Therefore, the need for project management skills in DH may require more extensive and specialized education on the subject.

Through their analysis, the authors identified certain institutions where students have the option of taking DH courses, among others, outside of their LIS program. While this may provide students with the technical skills needed for future DH positions, they may not address DH issues from a library perspective. These courses also require that students be aware

of DH as a rising field within librarianship, which may not be the case if the field is not present or visible in the program's curricula. Furthermore, administrative constraints such as caps on interdepartmental students or requiring departmental permission to take those courses may hinder LIS students' ability and willingness to take courses outside of their LIS programs. Therefore, if institutions are planning to rely on external courses for their DH instructions, they should ensure that registration for these courses is not cumbersome to students, and that these offerings are widely advertised to them.

Conclusion

This study conducts a detailed analysis of DH courses offered through ALA-accredited Canadian LIS programs to better understand what kind of DH training incoming librarians are receiving during their LIS education. The methodology described in this article can be used by librarians in different disciplines to better understand the status of LIS education, regardless of the subject area or topic.

The study found that all eight Canadian ALA-accredited LIS programs offer DH-relevant courses, but the number of courses offered as well as their range and scope vary from institution to institution. While many of the institutions are teaching some of the technical skills required by the field of DH librarianship, collaboration and project management training remain elusive in most programs. Future research could focus on analyzing course syllabi for a more accurate view of the DH concepts, skills, and tools taught in Canadian ALA-accredited LIS programs.

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