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Preparing Science Librarians for Success: An Evaluation of Position Advertisements and Recomendations for Library Science Curricula

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Preparing Science Librarians for Success: An Evaluation of Position Advertisements and Recommendations for Library Science Curricula

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Abstract

Science librarianship is a rapidly changing professional specialization that requires unique skills and experiences for science librarians to perform at

the highest level. A content analysis of recent job advertisements was conducted to determine the most desirable qualifications for science librarians. It was found that the most frequently cited qualifications include formal education and professional experience, and also, significantly, interpersonal skill sets in areas such as customer service, communication, and teaching. Furthermore, subject-specific scientific knowledge and experience was also found to be desirable for science librarian positions or departmental liaison roles. These results suggest that library schools should re-evaluate their curricula to make sure that their courses emphasize communication skills and offer subject-specific training as well as education in the traditional skills of librarianship.

Introduction

As librarianship continues to evolve, the roles of librarians continue to broaden and diversify. Preparing library science professionals for the current job market is more challenging than ever before. Understandably, students in Master of Library Science (MLS) programs wish to receive quality education -- preparation for both securing a job and excelling in the type of librarianship they choose. This is especially important for those who wish to pursue subject-specific academic library positions, such as in science librarianship.

Though many top LIS programs offer reference courses that prepare students for general library work, science librarians need to be trained for librarianship in their subject-specific field. All of the LIS programs that the 2009 U.S. News and World Report (U.S. News and World Report 2009) ranked 10th or higher offer multiple general reference courses. Most of these programs offer one general course for science resources and services; few offer an advanced version of this course or any sort of additional follow-up training. Likewise, most programs offer a class for health resources and services, but only programs with a specialization or dual-degree option in Health Sciences offer any sort of additional coursework.

Faculty in LIS programs must be aware of current expectations for science librarians in order to train their students to meet these expectations. A substantial body of literature discusses the role of the librarian within the academic realm (Cox 2006; Grogan 2007; Lynch 2008). A more limited amount of literature explores the role of the science subject librarian (Eells 2006; Jones et al. 2002; Ortega & Brown 2005), but these discussions have not been framed in the context of training and preparation for LIS students. Of the literature that addresses LIS education, few studies have explicitly addressed hiring qualifications for science librarians. In this study, these two components are brought together, using current job expectations to inform recommendations for the evaluation of LIS curricula.

This study examines the set of skills and knowledge currently expected of science librarians by potential employers. This information is then used to make recommendations about how LIS programs can best train their graduates to meet the demands of the current job market. It is hoped that these recommendations will help LIS faculty design relevant and useful curricula that will better prepare science

librarians for the futures that await them.

The key research questions are:

- What knowledge and skills are expected of science librarians as reflected in job advertisements?
- How do these expectations differ in different areas of the science librarianship?
- What recommendations can be made to LIS faculty responsible for their schools' curricula based on this information?

Literature Review

According to recent literature, traditional library skills remain essential for future science librarians. College and university librarians act as liaisons between the library and various academic departments within the institution. They must be able to engage with faculty in order to assist them in both scholarly research and curriculum development (Hardy & Corrall 2007). An understanding of current scholarly communication patterns among scientists as well as the present state of the scientific literature is also necessary to assist academic faculty (Brown 2006).

Strong reference skills continue to be important for a science librarian. They must be familiar with and able to navigate through the growing number of print and online scientific sources in order to obtain the most valuable search results (Brown 2006). Research surveys indicate that academic subject-specialist librarians perceive reference service as their most valued activity (McAbee & Graham 2005).

According to a study of Medical Library Association job announcements by Wu and Li (2008), user instruction ranks as one of the top five responsibilities sought in librarians. With the need to educate library users in information literacy skills, subject librarians are being called on to perform user-support roles through instruction along with the many traditional responsibilities encompassed in their position (Hardy & Corrall 2007). They must develop curriculum for instruction sessions and be capable of instructing library users from different disciplines in basic library skills, from simple retrieval to more advanced searching (Hardy & Corrall 2007).

In Wu and Li's study, technology skills also ranked as one of the top five qualifications sought in medical librarians (2008). Technology has revolutionized the way in which libraries operate, from the digitization of materials to electronic communication (Goetsch 2008). Librarians share information through e-mail, text messaging, web pages, blogs, wikis, and social networks; they also use these technologies to instruct library users (Field 2008). Virtual patron assistance through e-mail, chat, and instant messaging is becoming more common (Goetsch 2008). The ability to utilize technology for library services is vital for new librarians.

There is no consensus in the literature as to whether a science background should be required for a science librarian position. Jones et al. (2002) assert that a science background, while preferred by most employers, is not entirely necessary for science librarianship. Yet according to Brown, "the most commonly required qualifications are

an undergraduate degree in science and an understanding of the needs or research methods of scientists" (2006, pg.46). In any case, the qualifications sought for a position as a science librarian, including the necessity of a degree in science, are dependent on the specific nature of the job and the size of the hiring institution (Eells 2006).

The aforementioned literature describes many important competencies that are considered integral in successful science librarianship. These studies, however, typically evaluate librarianship in general rather than subject-specific science librarianship or are specific to only one scientific specialty. This study seeks to determine what competencies are presently required of science librarians by examining job postings in the field from the period of January 2008 to May 2009 and to make recommendations about how LIS programs can better prepare their graduates. Filling this gap in the literature will inform LIS departments about the essential training that students should have in order to be fully equipped to meet the demands of the current job market.

Methods

A content analysis of job advertisements was conducted to determine what skills and knowledge are expected of science librarians. This analysis identified the specific qualifications in each advertisement. The frequency of each skill or knowledge set was then evaluated across the sample set.

Advertisements were collected from various online sources, including professional association web sites, library science job posting sites, and Listserv archives (see Appendix A for a list of online sources). On some sites, job postings could be narrowed by category or keyword, such as academic libraries or science. However, in most cases, job advertisements were found by browsing the online postings. One obstacle that was encountered was the relatively short life span of job postings. Many sites did not retain advertisements longer than six months to a year, while others only retained postings from the most recent month. Attempts to search the Internet Archive for older versions of the web sites and older sets of job announcements were unsuccessful. As a result, most advertisements are from the past year, with some older announcements found via Listserv archives.

The advertisements were restricted to those for science librarians in academic settings, and print advertisements were not considered, since institutions primarily post their job openings online. Since most online job sites only retain the most current advertisements, most of the listings selected were posted between January 2008 and May 2009, although seven advertisements from 2007 were retrieved from Listserv archives. Advertisements included in the sample were from academic institutions in the United States and Canada for positions serving a subject-specific patron population (science generally or one area of science specifically) with duties listed such as reference, collection development, and instruction. Postings for part-time positions, those that were primarily administrative, and those that did not require familiarity with scientific information were excluded.

Once found, the advertisements were coded for the inclusion of specific sets of skills or knowledge and other qualifications in the required or preferred skills areas. Twenty-nine variables were identified to code position requirements. Job postings fell into four broad classes: General Science, Chemistry, Earth Sciences, and Health Sciences. Each ad was coded, then the ads from each broad class were analyzed as a group to assess any variability between these broad classes of specialization. The data were also combined and analyzed as one group to generate overall statistics for science librarianship in general. The frequency with which each variable occurred, both in the set of all ads and within each class, was calculated and represented by a percentage (e.g., customer service skills were listed in 83% of job ads sampled).

Results

Overall, seven variables were present in a majority (50% or more) of the job advertisements analyzed (Table 1). Holding a degree from an ALA-accredited institution or equivalent was desired by all of the job advertisements examined. Customer service/interpersonal peer relations (83%), oral and written communication skills (79%), bibliographic instruction/teaching (74%), subject specific knowledge/experience (69%), ability to work collaboratively (64%), and reference skills (57%) were also present in the majority of the ads.

Table 1: Desired Qualifications in Job Advertisements for Science Librarians.

Rank	Variable	Percent (Number)
1	ALA accredited MLS/MLIS/MIS	100 (42)
2	Customer service/ Interpersonal peer relations	83 (35)
3	Oral and written communication	79 (33)
4	Instruction/ teaching	74 (31)
5	Subject specific knowledge/experience	69 (29)
6	Ability to work collaboratively	64 (27)
7	Reference	57 (24)
8	General computer literacy	48 (20)
9	Innovative and new technologies	45 (19)
10	Database searching	43 (18)
11	Analytical and organizational	40 (17)
11	Subject specific bachelor's degree	40 (17)
13	Collection development	38 (16)
14	Ability to work independently	36 (15)
14	Minimum # years subject specific library experience	36 (15)
16	Minimum # years library experience	33 (14)
17	Ability to meet requirements for promotion/tenure	31 (13)
18	2nd degree Masters/PhD	29 (12)

19	Professionally active	26 (11)
20	Web design	24 (10)
21	Time-management	19 (8)
22	Leadership	17 (7)
23	Minimum # years supervisory experience	12 (5)
24	Assessment/ evaluation	10 (4)
25	Familiarity with automated library system	7 (3)
26	Curriculum development	2 (1)
26	Grant writing	2 (1)
26	IT troubleshooting	2 (1)
26	Minimum # years subject specific supervisory experience	2 (1)

n = 42.

General Science

Each of the four classes of job advertisements had similarities and differences (Table 2). General science librarian advertisements had the most focus on instruction/teaching skills (86% compared to 74% overall). Ads for this type of science librarianship also placed a higher emphasis than average on collection development (50% vs. 38% overall), database searching (50% vs. 43% overall), and library experience (50% vs. 33% overall).

Chemistry

Eighty three percent of the Chemistry librarian advertisements requested a subject specific bachelor's degree compared to 40% overall. Chemistry advertisements were also unique because of their emphasis on candidates who are able to work independently (67% vs. 36% overall) and have strong analytical and organizational skills (67% vs. 40% overall).

Earth Science

Job advertisements in the Earth Science/GIS category mentioned innovative and new technologies 75% of the time, far more than the overall rate of 45%. Also, in these advertisements general computer literacy was mentioned by 88% compared to the overall total of 48%. Ability to meet requirements for promotion/tenure was mentioned by over half (63%) of Earth Science/GIS advertisements, compared with 31% of overall advertisements.

Health Science

Job advertisements in the health sciences requested subject-specific library experience at a much higher rate (75%) than the overall rate (40%). Advertisements in this category also placed much less emphasis on customer service/interpersonal peer

relations (67% compared to 83% overall).

Table 2: Frequency and Percentage of Most Common Variables by Discipline.					
		General Science *(n=14)*	**Chemistry *(n=6)***	**Earth Science/GIS *(n=8)***	**Health Sciences *(n=12)***
Overall Rank*	**Variable**	**Percent (Number)**	**Percent (Number)**	**Percent (Number)**	**Percent (Number)**
1	ALA accredited MLS/MLIS/MIS	100 (14)	100 (6)	100 (8)	100 (12)
2	Customer service/ Interpersonal peer relations	79 (11)	100 (6)	100 (8)	67 (8)
3	Oral and written communication	71 (10)	83 (5)	75 (6)	83 (10)
4	Instruction/ teaching	86 (12)	83 (5)	75 (6)	58 (7)
5	Subject specific knowledge/experience	64 (9)	83 (5)	100 (8)	50 (6)
6	Ability to work collaboratively	50 (7)	100 (6)	75 (6)	58 (7)
7	Reference	64 (9)	33 (2)	75 (6)	50 (6)
8	General computer literacy	36 (5)	83 (5)	88 (7)	17 (2)
9	Innovative and new technologies	21 (3)	50 (3)	75 (6)	50 (6)
10	Database searching	50 (7)	50 (3)	38 (3)	42 (5)
11	Analytical and organizational	43 (6)	67 (4)	38 (3)	25 (3)
11	Subject specific bachelor's degree	43 (6)	83 (5)	50 (4)	0 (0)
13	Collection development	50 (7)	17 (1)	50 (4)	25 (3)
14	Ability to work independently	21 (3)	67 (4)	50 (4)	25 (3)
14	Minimum # years subject specific library experience	36 (5)	0 (0)	13 (1)	75 (9)
16	Minimum # years library experience	50 (7)	0 (0)	38 (3)	25 (3)

17	Ability to meet requirements for promotion/tenure	21 (3)	33 (2)	63 (5)	17 (2)
18	2nd degree Masters/PhD	29 (4)	50 (3)	38 (3)	8 (1)
* *n* = 42.					

Discussion

Every job advertisement asked for an MLS degree from an ALA-accredited institution or its equivalent. The next most frequently requested attribute was interpersonal skills. And while familiarity with emerging technology was cited in the review literature as a vital part of librarianship, only 45% of the science librarianship job advertisements in the sample asked for competency with new and innovative technology. Certainly successful science librarians will be expected to have technological skills, but these data suggest that interpersonal skills (such as communication and customer service) are more highly valued.

A scientific background, while clearly an asset, does not appear to be a requirement for science librarian positions. Sixty-nine percent of the job advertisements required familiarity with a specific scientific discipline. However, only 40% of the advertisements requested either coursework or a degree in science. Job advertisements linked to subject libraries in chemistry, health science, and earth science emphasized scientific background most frequently. Subject experience is less emphasized in positions where the librarian serves as a general liaison to the sciences.

Recommendations

It is vital that LIS students have the opportunity to acquire all of the skills and knowledge that they will need to prepare for a science librarian career. The skills and knowledge that are most frequently requested by employers should be taught in LIS curricula.

Four of the six most frequently mentioned qualifications involve interpersonal skills (customer service/interpersonal peer relations, oral and written communication, instruction/teaching, ability to work collaboratively). Though these skills may be difficult to teach in a classroom setting, LIS programs must integrate opportunities for the development of interpersonal skills into their curricula and pedagogy. While internships are an excellent way of gaining experience in some of these areas, activities emphasizing interpersonal skills can also be integrated into the classroom through group work, presentations, and other activities.

Furthermore, four of the ten most requested skill sets involve having a strong grasp of the nature and structure of information in specific scientific disciplines (teaching/instruction, reference, subject-specific knowledge/experience, and database searching). Students seeking positions in science librarianship should have the

opportunity not only to learn about the most common and important resources in each scientific discipline, but to develop subject-specific science experience. LIS programs must afford their students the opportunity to specialize.

In light of these findings, the following actions are recommended for LIS programs:

- Evaluate curricula in light of the current requirements of science librarianship to ensure that students are being prepared to meet the demands of professional employment.
- Ensure that collaborative and interpersonal skills are emphasized in pedagogy that incorporates group work and client projects.
- Incorporate opportunities for students to develop teaching and oral presentation skills in a variety of teaching environments.
- Provide support for internships and other professional development opportunities in which students can apply interpersonal and customer service skills.
- Develop collaborative programs that allow students of science librarianship to incorporate science coursework into their LIS degree programs, possibly including the opportunity to earn dual degrees in science and LIS.
- Offer ample opportunities for interested students to learn about the nature and structure of information and the most important resources in each of the scientific fields.

Further Study

Future research in this area may include the analysis of job advertisement datasets over a longer period of time, which would allow for a larger sample size and the possibility of tracking changes in the field of science librarianship. Other research could consider the job description portion of library job advertisements rather than just the required and recommended skill sets. An analysis of current LIS curricula would determine which current educational trends most adequately prepare students for success in science librarianship.

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Appendix A

Online Sources of Job Advertisements:

ALA Joblist (http://joblist.ala.org/index.cfm)
Chronicle of Higher Education Joblist (http://chronicle.com/section/Jobs/61/)
Indiana University Chemistry listserv (CHMINF-L) archive ({https://list.indiana.edu/sympa/arc/chminf-l})
Libgig (http://publicboard.libgig.com/)
LISjobs.com (http://lisjobs.com/jobseekers/job-ads.asp)
Maps-L listserv archives (http://www.listserv.uga.edu/archives/maps-l.html)
Medlib-L archives (http://list.uvm.edu/cgi-bin/wa?S1=MEDLIB-L&D=0)
SLA Joblist (http://careercenter.sla.org/search.cfm)
University of Texas Information Science Jobweb ({https://www.ischool.utexas.edu

/careers/icareers_students})
WAML Map & GIS Job Blog (http://www.listserv.uga.edu/archives/maps-l.html)