



Digital Initiatives in Academic Libraries: Challenges and Opportunities

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abstract: Digital initiatives have become increasingly common in academic libraries, but inconsistent definitions, standards, and expectations limit and, in some cases, negatively impact the effectiveness of practitioners. This article explores the discourse surrounding professional titles and responsibilities in digital initiatives within North American academic libraries between 1990 and 2020. A review of job advertisements, position descriptions, and professional activities reveals ambiguously defined responsibilities, inadequate technical education, and limited opportunities for training. Current trends suggest digital initiatives will expand from traditional digitization and digital library projects toward more diverse and flexible digital project management. This change will require familiarity with software development, systems administration, and library practices. The implication for library science education is the need for course programming that reflects these trends.

Background and History

Digital initiatives, as both a practice and a dedicated specialty in libraries, archives, and cultural institutions, has a decades-long history. Academic librarians were encouraged to acquire computer-related skills as early as 1984, regardless of their position in the library or its size. Correspondingly, library schools were urged to enrich their curricula, reflecting the demand for technology-literate graduates.¹ The specific term *digital initiatives* appears in a 1996 report of the activities of the Research Library Group (RLG). The RLG is a consortium of libraries, archives, universities, and museums founded in 1974 to develop cooperative solutions for preserving and accessing research materials. It offered workshops on the “digital conversion” of materials

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beginning in 1993.² This activity, subsequently referred to as *digitization*, soon developed into the technical project most frequently associated with digital initiatives in libraries, archives, and special collections.

Digitizing archival materials, primarily by scanning texts and creating digital surrogates of photographs and other images, became established in academic libraries by the start of the twenty-first century. Temple University in Philadelphia compiled a bibliography documenting digitization and digital imaging research published between 1980 and 2000. At the time, digital initiatives were distinguished from “digital collections,” described as activities centered on acquiring electronic third-party materials or digital resources released into the public domain.³ These and other information technology developments resulted in the creation of new positions, including librarians and professional staff responsible for implementing and managing digitization projects.

The proliferation of technology-oriented librarian positions between 1990 and 2000 prompted Karen Croneis and Pat Henderson to conduct a content analysis of employment announcements featuring the words *electronic* and *digital*. Their findings suggested an increase in such job listings, although responsibilities varied considerably.⁴ A subsequent survey of library directors by Youngok Choi and Edie Rasmussen revealed that occupational titles containing a combination of *digital* and *initiatives* increasingly began to appear in research libraries, many around 2003.⁵ The emergence of such positions paralleled the development of digital libraries.

The advent of digital libraries spurred the creation of a variety of projects and positions. Carnegie Mellon University in Pittsburgh released the Mercury Electronic Library to the public in 1991, the first digital library at an American university. It offered assorted materials, including electronically converted images of print documents.⁶ By 1999, the concept of the digital library “exploded worldwide,” according to Christine Borgman, but the definition of what constituted a digital library remained imprecise.⁷ An attempt at developing a distributed national digital library resulted in the 1995 creation of the Digital Library Federation (DLF), composed of academic libraries and the United States Library of Congress. The ensuing organization concentrated, however, on developing standards for interoperability and metadata, relinquishing plans for a centralized hub of digitized materials. The initial DLF definition of a *digital library* described an organization structurally and conceptually like a traditional library. The federation now describes itself as “a community of practitioners” participating in the design of digital library technologies.⁸

Digital libraries gave rise to digital librarians, a job title that, due in part to a lack of specificity, soon branched into a series of titles, including digital archivist, digital curator, digital scholarship librarian, emerging technologies librarian, and digital initiatives librarian.⁹

Data management is a rapidly evolving digital curation specialty in research-intensive institutions.

Digital archivists and digital curators extended traditional preservation practices to digital materials, safeguarding them for future use.¹⁰ Digital curation, of particular interest to researchers producing large and complex data sets, first gained attention in 2001 and was integrated into the library science curriculum soon after.¹¹ Data management is a rapidly evolving digital curation specialty in research-intensive institutions. The academic library, as an authority in information



preservation and dissemination, is naturally positioned to assume jurisdiction over such efforts.¹² Digital scholarship extends scholarly communications to the online world, focusing on copyright and access to scientific research and other academic writing.¹³ A digital scholarship librarian often works with institutional repositories and electronic journals, and is frequently involved in digital humanities projects at museums, archives, and other cultural heritage institutions.¹⁴ In research libraries, digital scholarship is often defined as incorporating technology into scientific investigations, including data, specialized applications, and geographic information system (GIS) mapping.¹⁵ An emerging technologies librarian occupies a less determined position, with requirements often involving social media skills and library outreach.¹⁶ Technology trends, including mobile applications and geotagging—that is, the addition of geographical information to a digital file or image—have also emerged as librarian responsibilities.¹⁷ For the digital initiatives librarian, in both digital and academic libraries, digitization remains the primary function, with the position additionally taking on elements of project management.

Digital libraries continue to conduct traditional library practices, including collection development, classification, and rights management. Prominent examples include the Internet Archive, Project Gutenberg, and the World Digital Library operated by the Library of Congress.¹⁸ Academic libraries also engage in digital projects fulfilling community research needs and reflecting local conditions. Digital collection platforms, digital institutional repositories, and electronic journal publishing systems are occasionally classified under the umbrella term *digital library*. A survey of recent literature and a review of library websites suggest, however, that the terms *digital projects* and *digital initiatives* are more commonly applied.

Digital Initiatives Practice and Skills

The Association for Information Science and Technology (ASIS&T), a membership organization for information science researchers and practitioners, compiled a list of representative job descriptions in several professional categories, including archives, records management, and libraries. The list includes this description of digital initiatives librarians from 2019:

Digital Initiatives Librarians have excellent communication skills as they will often need to communicate closely with a diverse number of stakeholders. They should have excellent technological skills including a knowledge of Web development and programming, a knowledge of Digital Asset Management Systems and Digital Repository administration, and a good knowledge of metadata standards. They should have a good overall knowledge of the types of digital services provided in libraries as well as a good knowledge of the issues surrounding the provision of digital content.¹⁹

Digital initiatives operations often include digitization of traditional print and image-based materials as a means for developing collections within digital repositories and digital asset management systems.

Digitization plays a large role in both collection development and preservation by providing access to sensitive historical holdings in the form of digital surrogates. Where scholarly resources are limited, often due to specialized subject areas or restricted audi-



ence size, digitization of print materials is a priority.²⁰ Digital libraries have continued to evolve, with recent developments including collaborative projects between academic libraries, government agencies, and cultural institutions. Such activities provide widely dispersed populations with access to technical information and primary source research materials.²¹ Throughout these evolutions, the digital initiatives librarian has often assumed the role of project manager.

In the business world, digital initiatives are usually regarded as technology-centered projects requiring management, often under the authority of a chief information officer.²² Coordinating procedures and workflows between technology specialists and departments participating in digital projects is now a regular responsibility of the digital initiatives librarian.²³ In their 2009 analysis of position requirements in American Library Association job ads, Janie Mathews and Harold Pardue observed that project management ability appeared at a rate corresponding to that of Web development skills.²⁴

Non-technology “soft” skills—especially the ability to interact and communicate with others—have become so important for successful digital initiatives.

One year later, Elías Tzoc and John Millard analyzed both required skills and courses offered in library educational programs, reaching a similar conclusion: “Equally important is a high frequency of requirements for some non-technology skills, notably interpersonal and communication, knowledge organization (metadata and cataloging), digital collection management, and project management skills as well as the ability to work independently and collaboratively.”²⁵ These non-technology “soft” skills—especially the ability to interact and communicate with others—have become so important for successful digital initiatives that cross-

training in management practices and technology was recommended for librarians and curators seeking credentials in the field.²⁶

Despite the fundamentally technological nature of digital initiatives, job ads frequently fail to specify the relevant technical knowledge. Sometimes, the lack of specifications results from the dynamic nature of contemporary software and systems, but it may also stem from a cautious, “do more with less” approach informed by budgetary issues and uncertainty over future trends and outcomes.²⁷ Arjun Sabharwal observes, “Shifting economic realities and priorities . . . have prompted academic institutions to realign services in support of online learning, electronic publishing, and other high-priority strategic goals.”²⁸ The increase in required technology skills observed by Mathews and Pardue revealed a significant intersection between postings for librarians and IT professionals, specifically referencing Web design, systems development, and applications.²⁹ ASIS&T offered a series of general specifications in its inclusive job description, including familiarity with the programming languages XML, CSS, JavaScript, and SQL, and knowledge of digital asset management and digital repository systems. All these prerequisites form a reasonable point of departure for a position invested in administering digital collections.³⁰ Technology skills have been a professional requirement for librarians in every department and position going back to 1994,³¹ but advances in specialized technical resources and services demand greater expertise:



Librarians now realize that their systems departments are no longer able to handle all the demands for supporting the many different types of technology available in the library so that library staff are increasingly being required to provide some level of technology support for themselves. The implication is that they have to acquire or develop “hard” technical skills.³²

Soft skills and specialized applications are well-defined, but library school administration should consider the demanding nature of rapid technological change to inform curricular development and to position graduates to respond flexibly and effectively when encountering unanticipated job requirements.

Digital Initiatives Education

Library education covers a range of professional information management practices in a variety of contexts. User service librarians, technical service librarians, and acquisitions librarians, to name a few, provide well-defined resources to academic, public, school, and special libraries. Thirty years of advancing information technologies challenge practitioners and educators alike, leading to frequent discussion of incorporating IT skills into the library science curriculum.

In 1996, computer literacy recommendations for librarians included a call for enriched “automation curricula,” reflecting the growing demand for computer-literate library school graduates.³³ Recognizing the technical deficiencies of practitioners in the field, digital librarian Roy Tennant offered the example of ASP and PHP, two similar Web development languages, and wondered how many librarians could explain their similarities, differences, and suitability for different tasks.³⁴ Choi and Rasmussen’s 2006 survey of library directors observed that a lack of formal training in basic programming and systems administration resulted in difficulties communicating with technical staff.³⁵ Project managers working with IT personnel responsible for Web-based systems require a reasonable knowledge of technology to make informed decisions and communicate project requirements clearly.

In its 2014 guidebook, the Library and Information Technology Association (LITA) encouraged prospective digital librarians to pursue programming skills during their time in library school.³⁶ If a suitable option was absent from the curriculum, students were encouraged to seek out additional, non-curricular opportunities to build competency in technical areas, often with the aid of open-source software and ideally within the context of professional development activities.³⁷ If a digital librarian needs a combination of technological and librarianship competencies, then the isolation of IT instruction from library and information science schools is intrinsically problematic.³⁸ For librarians engaged in digital practice, the advantages of an enhanced and combined curriculum are manifold, including reduced learning curves and increased flexibility. Providing adequate technology training enriches the efficiency of librarians in the digital environment generally, regardless of specialization. Not all academic librarians create

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metadata, but technical services instruction is an essential component of library and information science education, resulting in versatile and effective professionals. The same principle applies to digital resources and services.

Beyond Digitization

For a better understanding of contemporary practices, the author assembled position announcements from the American Library Association JobLIST, the Code4Lib and the Web4Lib mailing lists, and the GSLISJOBSLIST of the Queens College Graduate School of Library and Information Studies. The notices appeared during a five-month period, September 1, 2021, through February 1, 2022. Based on hiring requirements, including educational achievement (a master of library science or equivalent degree) and tenure-track faculty appointment status, suitable announcements were collected from a group of 80 messages. After eliminating duplicates, the remaining entries were evaluated based on areas of responsibility. Professional positions in digital initiatives were identified as those having digital projects, digital preservation, or digitization among their primary responsibilities. Additional duties included one or more of the following related specialties:

- digital asset, collection, or object management and coordination
- digital or open scholarship and digital humanities
- digital publishing
- information or academic technology support
- digital library development or management
- data management, analysis, visualization, or curation
- digital or data repository administration
- digital application or content development

Combined positions were retained in the corpus, but jobs working exclusively in metadata, systems, Web services, or instructional design were omitted. The resulting collection consisted of 49 announcements, comprising 29 distinct titles, which are displayed in Table 1.

Removing grammatical conjunctions, prepositions, and corporate names from the list, an analysis of term frequency illustrates the continued popularity of *digital* within titles, followed distantly by *scholarship* and *preservation*. Twenty-one terms appeared no more than three times, representing over half the list, indicating a proliferation of inconsistent titles referencing functionally similar occupations.

Digitizing special collections remains a prominent activity in academic library digital initiatives, but the decreasing appearance of the term *digitization* in position titles offers evidence that the practice is only one component of a broader endeavor.³⁹ Among the activities gaining prominence is digital repository management, a natural extension of digitization to support electronic theses, dissertations, and faculty scholarship. The expansion of open access licensing enables libraries to design and host electronic journals supporting their research communities, leading digital initiatives librarians into electronic publishing.⁴⁰ Open educational resources feature modifiable texts suitable for publication and redistribution as e-books, an activity benefiting from library expertise in metadata and aligned with the technical and project management skills of a digital initiatives



Table 1.

Frequency of job titles in announcements* seeking academic librarians for digital initiatives positions

Title	Frequency (n = 49)
Academic technologies librarian	1
Data librarian	1
Data management librarian	2
Digital archivist	3
Digital asset librarian	1
Digital collections archivist	1
Digital collections preservation librarian	1
Digital coordinator	2
Digital initiatives librarian	2
Digital initiatives and resources librarian	2
Digital initiatives and scholarly communication librarian	1
Digital librarian	1
Digital object metadata management librarian	1
Digital preservation librarian	5
Digital project management librarian	1
Digital projects librarian	2
Digital repository librarian	1
Digital scholarship librarian	7
Digital scholarship services librarian	1
Digital services librarian	3
Digital strategies librarian	1
Digital strategies and systems librarian	1
Digitization librarian	1
Information technology librarian	1
Open scholarship librarian	1
Research data management librarian	1
Scholarly communications and open publishing librarian	1
Systems and digital services librarian	1
Web applications librarian	2

*Announcements were collected between September 1, 2021, and February 1, 2022, from the American Library Association JobLIST, the Code4Lib and the Web4Lib mailing lists, and the GSLISJOBSLIST provided by the Queens College Graduate School of Library and Information Studies.

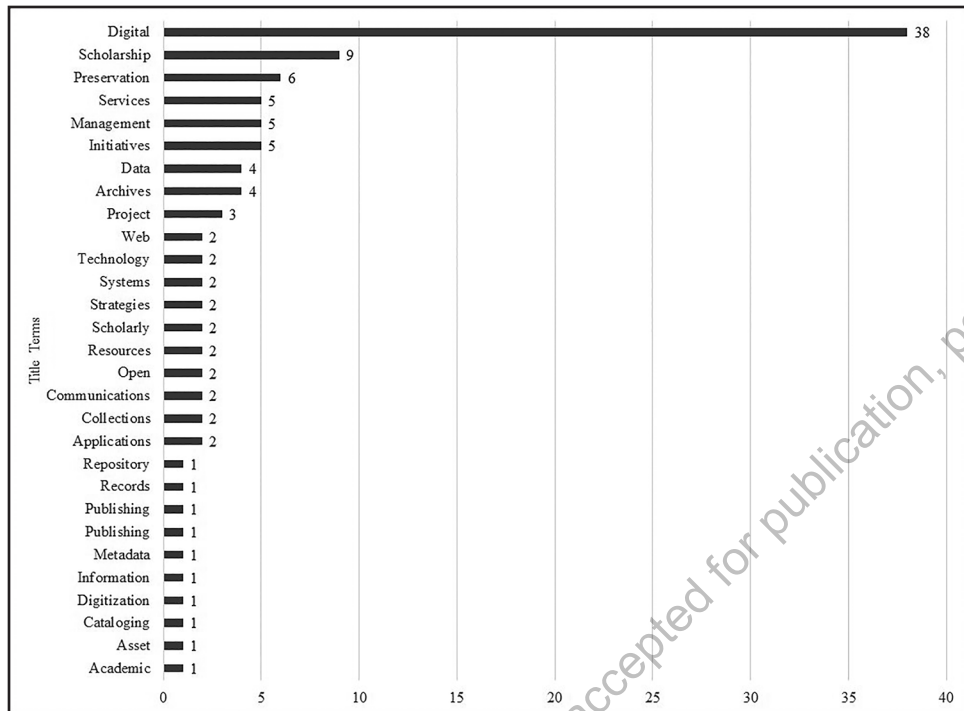


Figure 1. Frequency of terms used in announcements seeking academic librarians for digital initiatives positions between September 1, 2021, and February 1, 2022.

librarian. Incorporating library resources into online learning management systems is a growing activity suited for digital initiatives, as is developing systems and services to support library operations, such as internal knowledge management applications.⁴¹

The University of San Diego's Copley Library in California began hosting an annual Digital Initiatives Symposium in 2014. The symposium initially covered the "traditional" practices of digital libraries, digitization, and preservation, but subsequently featured

The growing significance of project management inspires new forms of research and experimentation.

presentations and workshops discussing data management, project management, digital scholarship, and the design-related practice of user experience. The growing significance of project management inspires new forms of research and experimentation, including the application of software development techniques to digital initiatives.⁴² A similar approach to library education might involve DevOps, a set of practices combining developer skills (*dev*) with knowledge of IT operations

(*ops*).⁴³ Software quality is measurably enhanced when participants understand the different factors affecting outcomes. This principle applies equally to academic library projects.

As new opportunities arise and digitization and preservation activities increase, digital initiatives should remain an active area of growth. This emerging specialty was initially promoted as a means for ensuring the persistence of electronic information,



and it still has preservation challenges to overcome.⁴⁴ Obsolescence, involving not only formats and storage mechanisms but also the exhibits and collections supporting them, remains a concern, in part because more attention is given to the initial stages of these projects than to future requirements.⁴⁵ Many online projects released as recently as 2018 and referenced as examples of sustainability are no longer accessible.

Digital initiatives librarianship has produced little or no consensus around its practice and prerequisites. Nonetheless, there are ample possibilities for professionals versed in librarianship, software development, systems administration, and project management, if they are provided with the proper academic training.⁴⁶ In her 2018 analysis of job advertisements, Elizabeth Skene observed that listed requirements were often disconnected from the actual work performed in libraries, particularly in technology-oriented positions, where the practice is actively evolving.⁴⁷ Maximizing the contributions of digital initiatives to the mission of academic libraries and to the institutions they serve will require careful consideration of the professional expectations and the supporting systems available, including educational resources both within and external to library school. It is a necessary step, however, in the evolution of libraries.

Maximizing the contributions of digital initiatives to the mission of academic libraries and to the institutions they serve will require careful consideration of the professional expectations and the supporting systems available.

Conclusion

In a dynamic, rapidly changing environment, a proliferation of titles, combined positions, inconsistent responsibilities, and unrelated requirements may be unavoidable. Acknowledging these circumstances, Skene writes, "Administrators are encouraged to develop positions based on needs, rather than responding to trends, and to ensure they provide librarians in these positions adequate support and opportunities for training."⁴⁸ Knut Blind, Andre Jungmittag, and Axel Mangelsdorf observe that standardization, resulting in uniform titles and descriptions, could prove beneficial, particularly when disseminating technical knowledge.⁴⁹ Valuable perspective could also be gained from analyzing the economic factors impacting positions and staffing, often leading to combined positions.

All the above notwithstanding, the place of digital initiatives in libraries is now established. Clarification of the specialty and its requirements for success is a necessary next step. This article provides insights into definitions, scope, educational requirements, and professional concerns. Based on these conclusions, the following three proposals might offer a contribution toward achieving clarity:

- Include technologists and technology practitioners, both within and outside the library, as participants in needs analysis, curriculum development, and position definition.
- Adopt standards for structuring library organizational units (staffing, administration, technology, and financial support) along with standards for position titles and educational requirements.



- Develop curricula that include broad but sufficiently detailed exposure to systems, software development, project management, and related disciplines.

Future studies could survey library administrators regarding digital initiatives positions, which could in turn be subjected to coding and qualitative analysis. Interviews with current practitioners could enumerate professional activities and projects for comparison with position descriptions and relevant coursework.⁵⁰ A review of technology departments and IT offices, their organizational structures, and their position titles could shed light on the resources available to support academic library digital initiatives.

Assessing library science technology and project management courses for comparison with position requirements is another promising avenue of investigation, offering new insights into library science education and its capacity for preparing future digital initiatives librarians. Where digital initiatives are concerned, technology knowledge is crucial for effective public service, familiarizing librarians and other information professionals with the full range of options available for problem-solving. This expertise should also inform curricular design. Addressing the shortage of qualified practitioners, Tennant observed, "No, all librarians need not know how to code software. But they should know what software is capable of doing, when a program could be easily written to accomplish a task, and what skills someone needs to write one."⁵¹ With the evolution of digital initiatives practice and its increasing relevance to academic libraries, standardizing and developing a library science curriculum reflecting this trend will ensure that digital initiatives specialists enter academic librarianship prepared to contribute to the present and future needs of the profession.

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