FEATURE

Core Competencies in Practice

Exploring Catalogers' Alignment with Professional Standards

Adrienne Sanders and Karen Snow

The purpose of this article is to report on a recent study that explores how well the self-assessed knowledge and skills of cataloging and metadata librarians correlate with the knowledge and skills described in the Core Competencies for Cataloging and Metadata Professional Librarians that was revised in 2023 by a group formed by the American Library Association's Core Metadata & Collections Leadership Team. A questionnaire gathered basic demographic information and invited participants to rate their understanding of the Knowledge core competencies, as well as rate how often they utilize the Skill/Ability core competencies. The results suggest that cataloging and metadata professional librarian participants of this study view themselves as having a good or full understanding of most Knowledge core competencies, even if many participants did not regularly use the Skill/Ability core competencies that include that knowledge.

Introduction

Identifying the core competencies of a profession is an important part of understanding what skills, abilities, knowledge, and behavior are expected in that profession. The *Core Competences of Librarianship*, published by the American Library Association (ALA), for example, was last updated in 2023 and provides what is considered to be foundational knowledge for librarians that should be acquired and refreshed throughout their careers.[1] The document also encourages "specialized and advanced knowledge beyond those specified in this Core Competences document," which highlights the necessity of additional core competencies documents and the importance of the *Core Competencies for Cataloging and Metadata Professional Librarians* (first published in 2017 and revised in 2023) to fill this gap for those in cataloging and metadata roles.[2]

The purpose of this article is to report on a recent exploratory study that investigates how well the self-assessed knowledge and skills of cataloging and metadata librarians correlate with the knowledge and skills described in the *Core Competencies for Cataloging and Metadata Professional Librarians* (hereafter *Core Competencies*). Background information on the *Core Competencies* will be provided first, as well as a literature review to supply the needed context for the *Core Competencies* and the study. Next, we will describe the study methodology and report the results, then finally discuss the importance of the results as well as limitations and future research.

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Background

Evans et al. offer a comprehensive account of the creation of the 2017 *Core Competencies,* and therefore, we will not go into great detail about the history of the document here.[3] Nonetheless, it is important to note that the process for creating the *Core Competencies*, which began in 2015, was meant to be collaborative and data-driven. The group tasked to create the document, the Cataloging Competencies Task Force, reviewed research and professional literature, as well as job descriptions that helped to inform multiple drafts. Additionally, the Task Force offered several opportunities online and during in-person conference sessions for the cataloging and metadata community to provide feedback on drafts. After several draft iterations of the *Core Competencies*, the Cataloging Competencies Task Force agreed on a document that included language meant to be agnostic of platform and schema, among other considerations, with examples provided to illustrate the competency statements. The final version of the *Core Competencies* is divided into three areas—Knowledge, Skill/Ability, and Behavioral Competencies—that reinforce and supplement the ALA's *Core Competences of Librarianship*.

The *Core Competencies* was published and endorsed by ALA in 2017 and states that the document "defines competencies in broad terms to acknowledge the wide variety of work performed by cataloging and metadata professionals in libraries of all types and sizes, regardless of developments in a particular standard or technology."[4] The Task Force notes that it has always seen the *Core Competencies* as a living document meant to be revised on a regular schedule with different people involved to bring fresh perspectives to the work and keep up with rapidly changing cataloging and metadata environments.[5]

In 2022, the Task Force surveyed the cataloging and metadata community to gauge their awareness and usage of the *Core Competencies*.[6] The 2022 study also asked for feedback on the *Core Competencies* that could be used for a future revision to the document. Overall, respondents to the questionnaire ($n = 434$) were supportive of the *Core Competencies* as presented in 2017 and felt the document needed little to no revisions, assuming study participants were aware of the existence of the document prior to completing the questionnaire (a significant number were not).[7] Some respondents recommended the inclusion of trends and standards that emerged since the *Core Competencies* was published in 2017, such as International Federation of Library Associations and Institutions' (IFLA's) Library Reference Model, and areas they felt needed more emphasis, such as ethics and diversity, equity, and inclusion (DEI) principles, and knowledge of linked data and artificial intelligence.[8]

The *Core Competencies* was revised throughout 2023 at the request of the leadership of the ALA Core Metadata & Collections section. The revision team was led by former Task Force member Karen Snow and included a diverse group of cataloging and metadata librarians. The revision team reviewed and seriously considered the feedback from the 2022 study of the *Core Competencies* and subsequently chose to keep the framework of the document intact (Knowledge, Skill/Ability, and Behavioral competencies), but updated the language, added statements representing new knowledge and skills since the 2017 document, and relocated the examples to an appendix at the end of the document. The study that is the focus of this article was inspired by a discussion of the revised *Core Competencies* in

a February 2024 webinar.[9] More specifically, the current study focuses on the frequency of skills and abilities used and knowledge of the competencies listed in the revised document.

Review of Related Literature

This study is unique. No other studies ask cataloging or metadata professionals to assess their knowledge and skills according to a prescribed list. However, there is a plethora of research that examines what qualities are in high demand for cataloging and metadata jobs. Studies like the ones found in the literature on this topic inform the background of the *Core Competencies* and are worth discussing briefly here because they touch on many of the qualities found in the *Core Competencies* and are impacted by the same trends found in the research literature, addressed below.

Competencies are the underlying skills and knowledge abilities needed within a domain, in this case, a professional domain. Across studies that address the competencies needed in professional cataloging and metadata work, there is a continued, uniform requirement for an ALA-accredited master's degree, which will not be further discussed here. Otherwise, there have been shifts over time regarding the desired skills and knowledge of catalogers and metadata librarians.

The rise of the internet beginning in the 1990s brought notable changes to the cataloging world, eventually leading to the modern cataloging and metadata environment that is reflected by the *Core Competencies*. Two studies that looked at how cataloging jobs changed over this period were "Requirements for Cataloguing Positions in the Electronic Environment" by Chaudry and Komathi and "The Impact of Information Technology on Job Requirements and Qualifications for Catalogers" by Khurshid. Chaudhry and Komathi compare job advertisements from 1990 to 1994 with job advertisements from 1995 to 1999, setting 1995 as the year the internet began to influence cataloging jobs.[10] The first mentions of metadata standards in reference to standards other than traditional Machine-Readable Cataloging (MARC) begin to appear during this time, bringing to light qualities and language that would eventually appear in the *Core Competencies*. Kurshid also gives an overview of how cataloging jobs have changed over time, from the beginning of the MARC standard in the 1960s, into the twenty-first century.[11] Kurshid looks at the impact of technology changes on position titles, degree requirements, and required skills of catalogers by analyzing job advertisements published in 2000 and 2001. Kurshid also identifies changes to position titles and requirements that reflect the desire for librarians familiar with emerging technologies, and notes the emergence of the word metadata in job titles.[12] As these articles and the following continue to show, with the rise of environments that require standards other than MARC, metadata became a term often used with or instead of cataloging to describe the work of describing and classifying library materials.

Into the 2010s, researchers continued to focus on the term metadata as an indicator of something new and different in the cataloging world. Han and Hswe (2010) focus on the presence of the term "metadata" in job advertisements.[13] They note that librarians tend to "use the term 'metadata' to refer to non-MARC descriptive metadata encompassing a variety of standards, schema, and so on."[14] The

term metadata is sometimes, but not always, used to include traditional cataloging as well. Perhaps because of this ambiguity, Han and Hswe find that the responsibilities and competencies of metadata librarians have yet to be clearly defined, and job descriptions vary in terms of the requirements and preferred qualifications listed. The *Core Competencies*, still several years from being written, had yet to bring clarity and unity to the desired qualities of cataloging and metadata librarians. In 2020, Turner's analysis of job descriptions found that "cataloging" librarians still outnumbered "metadata" librarians two to one by title. Turner also confirms Han and Hswe's usage of the term "metadata" to refer to non-MARC metadata.[15]

Turning to studies on library and information science (LIS) education, we find that educators strive, and sometimes struggle, to teach the breadth of topics involved in cataloging and metadata. Hall-Ellis uses results from previous studies of position descriptions and divides them into five domains: education, theoretical knowledge, cataloging competencies, communication skills, and interpersonal skills, the latter four of which correspond well to what would become the three sections of the *Core Competencies*.[16] Hall-Ellis concludes that cataloging courses will not entirely prepare catalogers for what employers want, and acknowledges that teaching new catalogers everything they need to know is a difficult and constantly changing assignment. Snow and Hoffman looked at the issue from the students' point of view and found that a balance of practical experience and theoretical knowledge in cataloging was most useful to their learning experience.[17] Although many students also recognized the need to balance theory and practice, they preferred practice. Smith, Daugherty, and Lowry looked at a broader variety of technical services skills and asked how well librarians felt library LIS programs prepared them for their job duties.[18] Cataloging and metadata management was one of only three categories where participants indicated they felt better than "not well at all" prepared by their coursework; 31.9 percent reported feeling "moderately well" prepared by cataloging and metadata coursework. Despite the difficulty of their task, it appears LIS educators in cataloging and metadata are finding some success in their methods.

The 2023 revision of the *Core Competencies* looked toward the future by adding a knowledge competency relating to artificial intelligence: "The impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)."[19] Chen and Li's study is one of the first research studies to look at librarians' use of and attitudes toward AI in cataloging.[20] They discovered that as of early 2024, most cataloging and metadata librarians were not using AI in their cataloging work, nor were they receiving training or formal education about AI. However, a significant number were able to correctly identify areas where artificial intelligence is likely to be useful and areas where it is likely to struggle to meet the needs of quality cataloging. Catalogers and metadata librarians absolutely anticipate using AI in their future work.

"Soft skills" are also seen as critical to cataloging and metadata work, as evidenced by their inclusion as the "Behavioral" competencies in the *Core Competencies*, but also in studies such as Lowry, who surveyed technical services librarians about their use and importance of soft skills in their work.[21]

Even though a significant number of participants indicated they received little formal education and training in developing soft skills, they nonetheless noted that skills such as teamwork and interpersonal communication were foundational competencies for technical services work.[22]

The articles and documents reviewed above describe the same qualities reflected in the *Core Competencies* and grapple with issues such as the need for cataloging and metadata librarians to understand both the theory behind and the practice of cataloging. They show the addition of new titles and job responsibilities that develop in parallel with technology, as well as the need to focus on developing "soft skills" as well as specific cataloging and metadata knowledge and abilities. All of these ultimately inform the knowledge and skills that make up the *Core Competencies*. Learning more about how current cataloging and metadata professional librarians assess their understanding and use of the *Core Competencies* is an important next step in identifying how well cataloging and metadata professional librarians are being prepared for their roles, as well as where education and training are successful and where they fall short.

Methodology

The questionnaire developed to gather data for this study (see appendix) was created based upon the Knowledge and Skill/Ability core competency statements found in the 2023 revision of the *Core Competencies*. We intentionally chose to exclude the Behavioral competencies from the questionnaire for two main reasons. First, we were most interested in learning more about the competencies that are specific to cataloging and metadata work, which are the Knowledge and Skill/Ability competencies. Though important, the Behavioral competencies have much broader applicability. Second, we worried that adding the Behavioral competencies to an already lengthy questionnaire would extend the time needed to complete it beyond what many participants were willing to spend. We recommend a future study on the Behavioral competencies specifically.

The questionnaire was placed in the online survey creation, dissemination, and analysis tool Qualtrics. In some cases, the wording used in the questionnaire duplicated what is in the 2023 *Core Competencies*; in other cases, complex statements were slightly reworded for clarity or broken up into multiple responses to ensure that participants were responding to specific competencies. For example, the Skill/Ability competency statement, "Formulates consistent and complete data by selecting, adapting, and applying a metadata content standard," was broken into three separate responses: "Select a metadata content standard," "Adapt a metadata content standard," and "Apply a metadata content standard."

After applying for and receiving institutional review board (IRB) approval from our respective institutions, the Qualtrics questionnaire was disseminated by both researchers to the following online email discussion lists and forums: OLAC, AUTOCAT, MOUG-L, OCLC-CAT, PUB-LIB, LM_NET, RADCAT, Troublesome Catalogers and Magical Metadata Fairies Facebook group, and ALA Connect. These lists and forums were chosen because they either have a cataloging/metadata focus or they cater to specific areas of librarianship, such as school librarianship or public librarianship. We invited anyone who is currently working as a professional cataloging or metadata librarian to participate.

The questionnaire was open to receive responses from July 10, 2024, through July 25, 2024, with one reminder sent to all lists and forums about halfway through that time period.

Once participants entered the questionnaire, they first provided their informed consent to participate in the study. The next four closed-ended questions collected demographic data, asking participants the type of library in which they primarily work, the country in which they primarily work, the percentage of time they spend cataloging during an average week, and how many years of experience they have cataloging and/or working with metadata.

The bulk of the questionnaire is divided into Knowledge and Skill/Ability areas with the modified competency statements from the 2023 revision of the *Core Competencies* mentioned earlier. Participants were asked to use a Likert scale of 1 to 4 in each section to self-assess their knowledge and the frequency of use of the skills/abilities, with the additional option to indicate that they do not know what is meant by the knowledge or skill/ability competency presented. In the Knowledge section, "1" represents no knowledge of a particular competency and "4" represents full understanding. In the Skill/Ability section, "1" indicates that the participant never uses the skill/ability, and "4" indicates the skill/ability is used all the time. Each section closes with a question requesting an open-ended response from participants who wanted to comment further on their earlier responses. We used Qualtrics data analysis tools, as well as Microsoft Excel, to complete the data analysis of the responses collected.

Results

Of the 604 participants who agreed to participate in the study by affirming their consent, 141 did not provide answers beyond the demographic questions; therefore, they were removed from the data set. A total of 463 responses remained. Although not every participant answered every question, all 463 respondents answered at least one question beyond the demographic questions.

Demographics

The first question after the participant provided their informed consent was, "For which type of library or institution do you primarily work?" As shown in table 1, of the 463 responses, the majority of respondents worked for academic or research libraries, and a significant number work for public libraries. Librarians who marked "Other" worked at library consortia or systems; federal, national, and state libraries; or libraries that fell into more than one given category.

Table 1. Question 2: For which type of library or institution do you primarily work? (n=463)

Answer options	Number of respondents	Percentage of respondents
Academic/research library	251	54.21%
Public library	126	27.21%
Special library (e.g., law, corporate)	27	5.83%

Answer options	Number of respondents	Percentage of respondents
Other (please explain)	23	4.97%
School library	14	3.02%
Museum	11	2.38%
Vendor/publisher	6	1.3%
Archive	3	0.65%
Historical society	2	0.43%
Total	463	100%

In response to the question, "In which country do you primarily work?," the preponderance—90 percent—of the 463 participants answered, "United States." Participants from Canada made up 5 percent, and less than 1 percent were from the United Kingdom. Respondents who marked "Other" made up 4 percent of the total, and they were asked to type their location in a text box. A total of 1.5 percent of survey respondents were from Australia, with seven respondents. The Netherlands and Ireland had two participants each, and one each from Barbados, Brazil, Bulgaria, Cambodia, France, New Zealand, Singapore, South Africa, and Uganda.

When asked, "What percentage of your time do you spend cataloging during an average week?," 47 percent of those surveyed said they spent more than half of their time cataloging. Only 18 percent of librarians spent between 31 and 50 percent of their time cataloging, and 20 percent spent between 11 and 30 percent of their time cataloging. A smaller but not insignificant group, 15 percent, spent less than ten percent of their work time cataloging.

The final demographic question asked, "How many years of experience do you have cataloging and/or working with metadata? Please include experience in professional and non-professional roles." There were again 463 respondents, with a broadly distributed range of experience, as shown in table 2, with the majority of participants (57 percent) having fifteen or fewer years of experience in cataloging and/or metadata work.

Table 2. Question 5: How many years of experience do you have cataloging and/or working with metadata? Please include experience in professional and non-professional roles. (n=463)

Answer options	Number of respondents	Percentage of respondents
0-5 years	95	20.52%
6–10 years	85	18.36%
11–15 years	82	17.71%
16–20 years	63	13.61%
21–25 years	47	10.15%
26–30 years	41	8.86%
More than 30 years	50	10.80%
Total	463	100%

Knowledge Competencies

The remainder of the questionnaire asked participants to rate their knowledge and skills competencies. In order to determine the overall knowledge of cataloging and metadata librarians, the results of respondents who answered both "Full" and "Good" to the knowledge competencies were added together to show the total number of respondents confident in their knowledge. Table 3 shows the ranking of competencies by percentage. The percentage of competent librarians ranges from as high as 96 percent to as low as 24 percent. It is notable that of the thirty-six listed knowledge competencies, study participants selected "Full" or "Good" at least 50 percent of the time for twenty-eight of the knowledge competencies. The Knowledge competency with the smallest percentage of participants (25 percent) choosing "Full" or "Good" is "The impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)."

Table 3. Knowledge competencies by percentage who marked "Full" or "Good" (n=463)

Competency	Number of respondents marking "Full" or "Good"	Percentage of respondents
Purpose and use of controlled vocabularies	449	96.56%
Descriptive standards that provide guidelines for describing library resources	443	95.27%
Purpose and use of classification schema	443	95.27%
Commonly used controlled vocabularies	437	93.98%
Value standards such as controlled vocabularies	435	93.55%
Commonly used classification schema	435	93.55%
Appropriate methods to organize library resources	423	90.97%
Benefits and purpose of identity management and authority control	417	89.68%
How metadata supports core library functions such as reference, liaison, and circulation work	409	87.96%
Impact of metadata on discovery and access to resources	409	87.96%
Information contained in an authority record	393	84.52%
Sources of authority records	388	83.44%
Principles of identity management and authority control	385	82.80%
Bias in metadata standards and awareness of how personal experiences may inform description	383	82.37%
The relationship of cataloging outputs to discovery and access use cases	377	81.08%
Theoretical foundation and evolution of metadata frameworks, ethics, principles, standards, and practices	365	78.49%
Major trends in cataloging and metadata	358	76.99%
Function and structure of library data management platforms, such as library management systems, institutional repositories, and content management systems	329	70.75%

Competency	Number of respondents marking "Full" or "Good"	Percentage of respondents
Data structure standards or schemas that define element sets for a particular descriptive domain	326	70.11%
Methods and approaches for metadata creation, editing, analysis, and transformation	325	69.89%
Metadata quality within different contexts, and create principles and practices to address metadata quality	314	67.53%
Ethical and transparent data	311	66.88%
Data encoding, format, and exchange standards that provide technical specifications for machine readability, computer processing, and data exchange	310	66.67%
Nature and function of cooperative databases and initiatives	303	65.16%
Historical context for current metadata practices	303	65.16%
Conceptual models for library data	272	58.49%
How metadata is stored, processed, and retrieved	263	56.56%
Indexing and database structure	241	51.83%
Usage rights and copyright for library resources	227	48.82%
Administrative and structural data standards that are machine-readable or machine-created to provide structure to objects and to track data modifications	223	47.96%
Differences and benefits of various ways to structure data (flat, hierarchical, graph, relational, semantic, etc.)	193	41.51%
Machine-generated metadata	183	39.35%
Principles of data provenance and how to track modifications of library data	171	36.77%
Computational accessibility of metadata	154	33.12%
Impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)	115	24.73%

Totals for participants who marked "None" or "I don't know what this means" were also compiled. Participants indicated no working knowledge of some concepts, with 11 percent indicating "None" when asked about their understanding of "The differences and the benefits of various ways to structure data (flat, hierarchical, graph, relational, semantic, etc.)." Another 8 percent of participants indicated no understanding of how metadata is stored, processed, or retrieved. Two competencies, "Administrative and structural data standards that are machine-readable or machine-created to provide structure to objects and to track data modifications" and "Indexing and database structure," were marked as "none" by 8 percent of participants.

Participants marked "I don't know what this means" if they did not understand what an option meant. The competencies in this category that participants selected most often were "Computational accessibility of metadata," at 15 percent of respondents, "Administrative and structural data standards

that are machine-readable or machine-created to provide structure to objects and to track data modifications," at 10 percent of respondents, and "Metadata quality within different contexts and create principles and practices to address metadata quality," with slightly less than 6 percent of respondents.

Skill/Ability Competencies

The rating of the skills section of the *Core Competencies* provides insight into what duties cataloging and metadata professional librarians actually perform. Results for "All the time" and "Often" were compiled in order to discover which skills the 422 respondents to this question commonly used. There are fewer responses to the Skill/Ability competencies than the Knowledge competencies because some participants chose to complete the former and not the latter.

Averages for these results are somewhat lower than those for knowledge competencies; nonetheless, twenty out of the thirty skills competencies listed were performed "Often" or "All the time" by the majority (over 50 percent) of participants. Of those who responded, 83 percent of study participants "Assign controlled vocabularies" often or all the time; 82 percent "Assign authorized access points for agents" (e.g., persons, families, and corporate bodies), and another 82 percent "Perform subject analysis" all the time or often. At the bottom of the range, only 17 percent regularly "Map/crosswalk metadata," and only 18 percent either "Modify metadata application profiles" or "Design metadata application profiles."

Other tasks were also infrequently performed, with 45 percent of participants indicating "Never" for "Create authority records for non-agents (e.g., work titles, series titles)." Other qualities most marked "Never" overlap with the lowest rankings of "All the time" and "Often," with nearly 40 percent indicating they never "Map/crosswalk metadata," and 39 percent indicating that they do not design metadata application profiles. Again, participants had the opportunity to mark "I don't know what this means," and the statement chosen most often was "Recognize the role of interoperability in metadata ecosystems" (16 percent of respondents). Some participants also did not understand the meaning of "Design metadata application profiles" or "Modify metadata application profiles," each chosen by 14 percent of respondents.

Open-Ended Comments

The Knowledge and Skill/Ability sections of the questionnaire contained an option to add further explanation of the answers chosen in the Likert scale. The Knowledge section of the questionnaire received thirty-nine comments in the free text box, and the Skill/Ability section received thirty-seven comments. Many of the comments provided context for how participants' knowledge relates to their work. One respondent said, "For some of these I know the specific tool we use very well, but if you're asking about theory behind it or the theoretical higher concept, I don't know *that concept* well. Examples: MARC very well; but 'Data structure standards and schemas . . .' not so well." Another librarian stated, "As a metadata librarian working on digital collections, I don't do much work with

classification." A handful of comments explicitly stated that the librarian was new to cataloging, and in a few cases was also a solo cataloger with no institutional knowledge to rely on. A few commenters mentioned how some of the *Core Competencies* skills may be appropriate to management roles but not to most other cataloging and metadata librarians.

Other comments focused on the language of the *Core Competencies* or the rating system used for the survey. Multiple librarians stated that full understanding would be hard to achieve: "I'm answering 'good' for things that I feel very competent in. I'm not sure I could ever have 'full' understanding of these concepts." In the Skills/Abilities section, respondents said they would have liked to answer "sometimes," which was not a given option.

The language of the survey was taken directly from the *Core Competencies*, and although it is accurate, it is admittedly sometimes obscure. Some librarians' comments indicated it was a barrier to self-assessment during the survey. One respondent wrote that "in the efficacy of your pedagogy, most will get lost in your nomenclature." Others put it more plainly, writing "Potentially have done and heard of what you are asking but do not understand what is being asked" and "I am probably using metadata every day, but I am not aware of it."

Academic Libraries

After reviewing the data for all respondents, the data were separated by library type. The majority of respondents worked at academic or research libraries, and 241 of them responded to the Knowledge competencies. Due to the small sample size in other categories of libraries, data from those library types were not compared. The competencies to which the most of this subset of respondents chose "Full" as their answer were "The purpose and use of controlled vocabularies," at 74 percent; "The purpose and use of classification schema," at 67 percent; and "The impact of metadata on discovery and access to resources," at 63 percent. Smaller percentages of academic librarians chose "None," indicating that 17 percent lack knowledge on "The impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)." Another 15 percent have no knowledge of principles of data provenance and how to track modifications of library data, and 14 percent indicated "None" for the competency, "Machine-generated metadata." Finally, some of the academic library respondents chose "I don't know what this means" for the competencies "Computational accessibility of metadata," at 12 percent; "Administrative and structural data standards that are machine-readable or machine-created to provide structure to objects and to track data modifications," at 8 percent; and "Metadata quality within different contexts and create principles and practices to address metadata quality," with 6 percent.

Turning to the Skills competencies, 230 respondents primarily work in academic libraries. Of those, 62 percent answered that they "Apply a metadata content standard" all the time. The next most common skills were "Perform subject analysis" and "Assign controlled vocabularies," both at 60 percent. The percentage of cataloging and metadata librarians in academic libraries who indicated that they never "Create authority records for non-agents (e.g., work titles, series titles)" is

44 percent. Another 34 percent do not "Map/crosswalk metadata," and 33 percent do not "Design metadata application profiles." Smaller percentages of this subset of librarians marked "I don't know what this means," with 15 percent selecting "Create and manage machine-actionable data using formatting standards, serialization standards, and structural standards"; 13 percent choosing "Assign notation from a classification standard"; and 13 percent marking "Modify metadata application profiles."

Public Libraries

One hundred twenty-four metadata and cataloging librarians in public libraries rated the Knowledge competencies. Public librarians indicated full competence of "The purpose and use of controlled vocabularies," at 67 percent; "Benefits and purpose of identity management," with 57 percent, and "Value standards such as controlled vocabularies," at 55 percent. Smaller percentages of these respondents indicated "None," with 26 percent indicating no knowledge of "The impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)." Twenty-four percent chose "None" for their knowledge of "Principles of data provenance and how to track modifications of library data," and 20 percent chose "Machine-generated metadata." Finally, a few public librarians chose "I don't know what this means," with 19 percent indicating "Computational accessibility of metadata," and 12 percent choosing "Administrative and structural data standards that are machine-readable or machine-created to provide structure to objects and to track data modifications." Finally, 7 percent of participants indicated that they do not know the meaning of competencies: "Data structure standards or schemas that define element sets for a particular descriptive domain," and "Metadata quality within different contexts and create principles and practices to address metadata quality."

Years of Experience

Data separated by years of service gives insight into the ongoing development of knowledge and skills of cataloging and metadata librarians. When data for librarians with zero to five years of experience and six to ten years of experience are combined to look at all librarians with ten or fewer years of experience, we find that only four *Core Competencies* had more than 50 percent of librarians marked "Full" in the Knowledge section of the survey. Conversely, combined data for librarians with more than twenty years of experience showed that over half marked "Full" knowledge for fourteen of the *Core Competencies*. Table 4 compares the competencies where the most respondents marked that they had "Full" knowledge of the competency in question. In total, eight competencies are listed due to partial overlap of top competencies across both groups, and a tie for the fifth most commonly known competency in the group with more than twenty years of experience. The results show higher percentages of "Full" knowledge across the board for more experienced librarians.

Table 4. "Full" knowledge by years of service.

	10 or fewer years (*n=180*)		20 or more years (*n=138*)	
Knowledge competency	**Number of respondents marking "Full"**	**Percentage of respondents**	**Number of respondents marking "Full"**	**Percentage of respondents**
Purpose and use of controlled vocabularies	116	64.44%	110	79.71%
Commonly used controlled vocabularies	97	53.89%	95	68.84%
Impact of metadata on discovery and access to resources	93	51.67%	84	60.87%
How metadata supports core library functions such as reference, liaison, and circulation work	91	50.56%	88	63.77%
Purpose and use of classification schema	86	47.78%	110	79.71%
Value standards such as controlled vocabularies	83	46.11%	95	68.84%
Benefits and purpose of identity management and authority control	82	45.56%	102	73.91%
Descriptive standards that provide guidelines for describing library resources	53	29.44%	104	75.36%

Table 5. "None" knowledge by years of service.

	10 or fewer years (*n=180*)		20 or more years (*n=138*)	
Knowledge competency	**Number of respondents marking "None"**	**Percentage of respondents**	**Number of respondents marking "None"**	**Percentage of respondents**
Impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)	42	23.33%	32	23.19%
Principles of data provenance and how to track modifications of library data	35	19.44%	22	15.94%
Machine-generated metadata	31	17.22%	18	13.04%
Differences and benefits of various ways to structure data (flat, hierarchical, graph, relational, semantic, etc.)	24	13.33%	13	9.42%
Usage rights and copyright for library resources	22	12.22%	8	5.8%
Computational accessibility of metadata	20	11.11%	16	11.59%

As table 5 shows, smaller percentages of respondents marked "None" for competencies where they lacked knowledge, and four of the five least known competencies were the same for both groups. The three least known were: "The impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLM)," with 23 percent for both the newest and most experienced librarians; "Principles of data provenance and how to track modifications of library data," with 19 percent for librarians with ten years or less of experience and 16 percent for those with over twenty years of experience marking "None"; and "Machine-generated metadata," with 17 percent of librarians with ten years or fewer of experience, and 13 percent for those with over twenty years of experience.

In the Skills section, librarians with the most and least experience marked "All the time" for the same top three competencies. Librarians "Assign authorized access points for agents (e.g., persons, families, & corporate bodies)," "Perform subject analysis," and "Assign controlled vocabularies" most frequently regardless of their years of experience. However, the cataloging and metadata librarians with more than twenty years of experience indicated that they did between 64 percent and 69 percent of the time. Those with ten or fewer years' experience demonstrated those same skills between 50 percent and 53 percent of the time.

Discussion

This study sought to provide a snapshot of professional cataloging and metadata librarian self-assessed levels of knowledge and use of the *Core Competencies*. Even though the responses of the study participants may not be fully representative of the entire cataloging and metadata librarian population, the results of this study nonetheless shed light on cataloging and metadata librarian competencies that are at once encouraging as well as concerning.

On a positive note, most of the study participants indicated they have either "Good" or "Full" understanding of the Knowledge competencies, which is remarkable considering the number of Knowledge competencies and the wide range of knowledge cataloging and metadata librarians are expected to learn throughout their careers. We were expecting that participants would not choose the equivalent options "Often" or "All the time" for the Skill/Ability competencies due to the very different expectations in cataloging and metadata librarian roles and environments. For instance, it is understandable that participants would not "Design metadata application profiles" regularly if that is not part of their job description, even if they know how to do so. Nonetheless, many of the study participants indicated that they engaged with the listed Skill/Ability competencies "Often" or "All the time."

Across all demographics, most participants assign controlled vocabularies and classification numbers regularly, as well as perform subject analysis. The majority also felt confident in their knowledge of controlled vocabularies and classification systems, as well as the controlled vocabularies commonly

used in libraries, so it is heartening to see that most participants felt that they have the needed knowledge to perform the commonly used skill.

On the other hand, a significant number of participants struggled with understanding "The differences and the benefits of various ways to structure data (flat, hierarchical, graph, relational, semantic, etc.)" and "How metadata is stored, processed, and retrieved," as well as "Computational accessibility of metadata," the latter being a competency 15 percent of participants said they did not know what it means. The data suggest that there may be a lack of education or training for cataloging and metadata librarians on the systems side of the work. Even if cataloging and metadata librarians fully understand how to assign a Library of Congress Subject Heading and place it in a MARC record, they may not grasp the underlying structure of the metadata they create or how it is stored, processed, and retrieved by computer systems. This point is driven home by the respondent mentioned earlier in this paper, who noted that they understood MARC well, but not the "theory behind it."

In addition, a significant number of participants indicated that they not only never design or utilize metadata application profiles, 14 percent did not even understand what the competencies relating to metadata application profiles mean. This lack of understanding of metadata application profiles may be particularly problematic for the transition to official RDA, which will require cataloging and metadata librarians to rely heavily on metadata application profiles. Finally, and perhaps unsurprisingly, the majority of participants noted their lack of knowledge of AI applications and LLM. Since the use and impact of AI and LLM tools have come to the attention of many cataloging and metadata librarians only recently, this result was somewhat predictable, but still an important data point considering the likelihood of increased usage of AI and LLM applications in cataloging and metadata work going forward.

Additionally, the language of the competency statements themselves was a barrier to some participants, so it is difficult to know if a competency is truly not utilized or if it is simply not understood. As noted above, one participant commented that they "Potentially have done and heard of what you are asking but do not understand what is being asked." This issue is possibly one of training and education but also could point to the need for revised language in the *Core Competencies* that better reflects the understanding of cataloging and metadata practitioners.

The results related to years of experience confirm the *Core Competencies* assertion that "competence in cataloging and metadata is obtained over the course of an individual's career" rather than through formal education alone.[23] While the most and least well-known Knowledge competencies were the same for the groups with the least and most experience, the number of competencies where more than 50 percent of librarians marked "Full" was significantly greater among the more experienced librarians. Those with twenty or more years of experience have greater knowledge of more competencies than any other group. Across their careers, librarians may be solidifying existing knowledge, learning new things, or a mixture of both. Regardless, it is evident that much of cataloging and metadata librarians' learning is done "on the job" or through professional development, after formal education is completed.

The top three Skill/Ability competencies were again the same for the most and least experienced librarians, as they were for librarians across the board. However, more experienced librarians perform the tasks more frequently, by about 15 percent. This could be due to a difference between what is asked for in entry-level positions versus more advanced cataloging or metadata positions. Results may also reflect differing levels of understanding of skills to which the competency refers.

Limitations

This study provides a unique and valuable window into cataloging and metadata librarians' level of understanding of, as well as use of, the Knowledge and Skill/Ability core competencies listed in the 2023 *Core Competencies for Cataloging and Metadata Professional Librarians*. However, there are limitations to the study. One limitation is that we asked participants to self-assess their level of understanding of the Knowledge core competencies and use of the Skill/Ability core competencies, which may not be truly accurate. Participants may over- or underestimate their understanding or ability for a variety of reasons, so the results of self-assessments need to be viewed with this in mind.[24] Further research asking participants to directly explain their understanding or perform a skill may more accurately measure participants' actual knowledge and skills.

Furthermore, this study used convenience sampling by recruiting participants primarily from online forums, email discussion lists, and social media sites. As a result, the voices of cataloging and metadata librarians not on any of the above platforms are absent. Additional research that explicitly includes this population would be useful.

Finally, another potential limitation is the language of the *Core Competencies* themselves, as mentioned in the Discussion section above. The results of the study could potentially be different if definitions and/or examples were provided on the questionnaire.

Conclusion

This study contributes to the research literature on cataloging and metadata competencies, education, and training by exploring the extent to which cataloging and metadata professional librarians understand and use the Knowledge and Skill/Ability *Core Competencies*, respectively. The results highlight areas of strength and areas in need of attention by the cataloging and metadata community. One area is the education and training of future and current cataloging and metadata professional librarians. The results suggest that many of the study participants feel competent in their understanding of most of the Knowledge *Core Competencies*. However, the Knowledge competencies with lower rates of understanding should receive greater attention in cataloging/metadata education and training, such as knowledge of how metadata is structured, processed, and accessed, as well as the design and modification of metadata application profiles, and the use and impact of AI and LLM.

Additionally, this study illuminates what many cataloging and metadata librarians likely already know: not only is cataloging and metadata work becoming more complex, but the proliferation of standards and technologies makes the idea of being—much less *feeling*—competent a seemingly Sisyphean task. The IFLA *Trend Report 2024* points toward this when it cites as trend four: "Skills and abilities are becoming more complex."[25] In their document intended to inspire libraries and librarians to think about and plan for future success, they cite an increased demand for complex digital skills, which is already evident in the *Core Competencies*. This challenge underscores the importance not only of having the *Core Competencies* but also of continually updating and intentionally incorporating them into cataloging and metadata education and training.

Notes

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Appendix

Questionnaire Text

Q1. *Informed Consent*

1. I agree (and wish to participate)

2. I disagree (and do not wish to participate)

Q2. *For which type of library or institution do you primarily work?*

1. Academic/Research Library

2. Public Library

3. School Library

4. Special Library (e.g., law, medical)

5. Archive

6. Museum

7. Historical Society

8. Vendor/Publisher

9. Other (please explain)

Q3. *In which country do you primarily work?*

1. United States

2. Canada

3. United Kingdom

4. Other (please specify)

Q4. *What percentage of your time do you spend cataloging during an average week?*

1. Less than 10 percent

2. 11–30 percent

3. 31–50 percent

4. Greater than 50 percent

Q5. *How many years of experience do you have cataloging and/or working with metadata? Please include experience in professional and nonprofessional roles.*

1. 0–5 years

2. 6–10 years

3. 11–15 years

4. 16–20 years

5. 21–25 years

6. 26–30 years

7. 30+ years

Q6. *Knowledge Competencies*

On a scale of 1 to 4, with **1 being none at all** and **4 being full understanding**, rate your understanding of the following concepts related to cataloging—please note that you are not rating frequency of use, only understanding. If you do not understand what an option means, choose "I don't know what this means"

	I don't know what this means	**(1) None**	**(2) A little**	**(3) Good**	**(4) Full**
Theoretical foundation and evolution of metadata frameworks, ethics, principles, standards, and practices					
Descriptive standards that provide guidelines for describing library resources					
Data structure standards or schemas that define element sets for a particular descriptive domain					
Data encoding, format, and exchange standards that provide technical specifications for machine readability, computer processing, and data exchange					
Value standards such as controlled vocabularies					
Administrative and structural data standards that are machine-readable or machine-created to provide structure to objects and to track data modifications					
Principles of identity management and authority control					
Benefits and purpose of identity management and authority control					
Information contained in an authority record					
Sources of authority records					
Purpose and use of controlled vocabularies					
Commonly used controlled vocabularies					
Purpose and use of classification schema					
Commonly used classification schema					
Appropriate methods to organize library resources					
Conceptual models for library data					
Differences and benefits of various ways to structure data (flat, hierarchical, graph, relational, semantic, etc.)					
How metadata is stored, processed, and retrieved					
Indexing and database structure					
Relationship of cataloging outputs to discovery and access use cases					

	I don't know what this means	(1) None	(2) A little	(3) Good	(4) Full
Function and structure of library data management platforms, such as library management systems, institutional repositories, and content management systems					
Nature and function of cooperative databases and initiatives					
Historical context for current metadata practices					
Methods and approaches for metadata creation, editing, analysis, and transformation					
How metadata supports core library functions such as reference, liaison, and circulation work					
Metadata quality within different contexts, and create principles and practices to address metadata quality					
Impact of metadata on discovery and access to resources					
Major trends in cataloging and metadata					
Impact, limitations, and possible usage of artificial intelligence (AI) applications and large language models (LLMs)					
Bias in metadata standards and awareness of how personal experiences may inform description					
Ethical and transparent data					
Computational accessibility of metadata					
Principles of data provenance and how to track modifications of library data					
Usage rights and copyright for library resources					
Machine-generated metadata					

Please add further explanation of your answers, if needed:

Q7. *Skill/Ability Competencies*

On a scale of 1 to 4, with **1 being never** and **4 being all the time**, rate how frequently you engage in the following activities related to skills/ability competencies. If you do not understand what an option means, choose: "I don't know what this means"

	I don't know what this means	(1) Never	(2) Rarely	(3) Often	(4) All the time
Select a metadata content standard					
Adapt a metadata content standard					
Apply a metadata content standard					
Identify controlled vocabularies					
Evaluate controlled vocabularies					

	I don't know what this means	(1) Never	(2) Rarely	(3) Often	(4) All the time
Assign controlled vocabularies					
Assign authorized access points for agents (e.g., persons, families, and corporate bodies)					
Assign authorized access points for non-agents (e.g., work titles, series titles)					
Create authority records for agents (e.g., persons, families, and corporate bodies)					
Create authority records for non-agents (e.g., work titles, series titles)					
Perform subject analysis					
Assign notation from a classification standard					
Create and manage machine-actionable data using formatting standards, serialization standards, and structural standards					
Emphasize relationships between entities (e.g., relationship designators)					
Evaluate metadata value standards for accessibility and inclusion					
Evaluate user metadata needs					
Advise on local metadata practice and decisions					
Document local metadata practice and decisions					
Explain local metadata practice and decisions					
Review periodically local metadata practice and decisions					
Design metadata workflow processes					
Modify metadata workflow processes					
Design metadata application profiles					
Modify metadata application profiles					
Evaluate quality of externally-produced metadata					
Map/crosswalk metadata					
Employ standards to normalize metadata					
Recognize role of interoperability in metadata ecosystems					
Formulate methods for quality control					
Document metadata management practices					

Please add further explanation of your answers, if needed: