

**The Value of American Library Association-Accredited Master's Programs in  
Library & Information Studies: Serving Our Communities Through a Professional  
Workforce**

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## Executive Summary

The last several years have been marked by a number of societal challenges and changes that include the evolving nature of our economy; the workforce skills needed to succeed in a shifting job market; advances in technology; the changing nature of information; transformations in education and learning approaches; and rapid demographic shifts occurring in communities. In part, this context has given rise to questions about the future of libraries and the value that the professional librarians who work in them bring to the institution and the communities that they serve.

This White Paper sought to explore and answer the following questions: What is the value of an ALA-accredited Master of Library and Information Studies (MLIS) degree? What aptitudes, competencies, and abilities do MLIS degree-holding professionals possess that are unique to those degree holders? What set of values do ALA-accredited MLIS-holding professionals hold that enable them to serve their respective communities in ways that other professional degree holders cannot?

The White Paper finds that degreed librarians bring value to the institution, profession, information space, and communities that they serve in the following ways:

- **The values of the profession.** From their inception, libraries have been at the center of social justice, change, and innovation, offering services that engage, educate, and empower their users. As part of this broader vision and mission, librarians bring powerful values to their communities and the information professions in such areas as inclusion, privacy, equity, open government, civic engagement, human rights, intellectual freedom, and democratic values and ideals.
- **Understanding information and information theory in everyday life.** Libraries and information centers are unique in the volume and variety information needs that they serve. Information theory and information seeking behaviors are an essential and unique skill required of librarians, and are embedded in standards designed to provide library professionals with the requisite foundational skills to understand information problems and how to assist individuals resolve their information needs.
- **Meeting information and other needs.** A foundational aspect of MLIS education is reference. Launched as a way to elicit the information need(s) of any individual that a library might serve, librarians are expected to master the skill of linking the information need(s) of an individual with an appropriate information resource. This skill has extended beyond information in recent years to include life issues faced by individuals seeking the help of librarians. The ability of librarians to meet these challenging and often complex needs of individuals is firmly rooted in the reference interview, a skill that is extensible, versatile, and unique to credentialed librarians.
- **Focus on multiple literacies.** Libraries and librarians of all types engage in a range of instructional activities, services, and resource provision focused on multiple forms of literacies such as early childhood, youth, information, and

increasingly, creation. The combination of the library's environment, the library space, trust, and librarian expertise create a particularly rich and conducive environment for literacy-focused activities particularly in areas of early childhood and youth literacy, information literacy, digital literacy, and emerging areas of design, making, and entrepreneurship and innovation.

- **Learning and collaborative spaces.** Librarians have a particular opportunity to foster learning by attending to an individual's particular interests, needs, and educational goals – by connecting individuals to appropriate resources, connecting their interests and values to formal learning opportunities, and developing social connections to peers with similar interests, which can promote further exploration. Librarians can create both formal and informal learning spaces that develop “readiness to learn” abilities that promote lifelong learning.
- **Meeting technology needs and competencies.** With their technology skills, understanding of information resources and digital content, understanding of their users and communities, and a public service outlook, librarians are critical to ensuring digital inclusion and readiness in the communities that they serve. While there are other degree programs that can provide technical proficiency no degree other than the MLIS provides a focus on the combination of people, communities, technology, inclusion, and information.
- **Facilitating open data and open government.** Data – and their analysis – are increasingly central to better understanding and improving the communities in which we live. Libraries and information organizations play an important role at the intersections of government, civic organizations, neighborhoods, and the public – thus making them critical elements of community information and data ecosystems. Libraries have the ability to serve as community open data hubs, as well as assume critical roles to ensure open and transparent government that include data stewardship, data cleaning and preparation, data analytics, data visualizations, and data privacy and security practices.

The library as place can be many things to many people – a welcoming space; a place of learning; a means to bridge the digital divide; a place in which everyone is equal; and a place which to make, create, and experiment. But what makes the place a *library* is the credentialed librarian. There is no other professional degree program that focuses on the combination of information, people, needs, learning, values, technology, and communities.

## Introduction

The last several years have been marked by a number of societal challenges and changes that include, but are not limited to, the evolving nature of our economy; the workforce skills needed to succeed in a shifting job market; advances in technology; the changing nature of information; transformations in education and learning approaches; and rapid demographic shifts occurring in communities. These challenges, articulated recently as Sustainable Development Goals (SDGs), have had a significant impact on individuals, communities, and institutions (United Nations, 2015) – but also a particular impact on public and cultural institutions such as libraries (American Library Association, 2014, 2015, 2016).

Indeed, there has been much discussion, consternation even, regarding the future of libraries (Worstell, 2014; Smith, 2012; Garmer, 2014). As we consider the future of libraries, there is a corresponding need to focus on the American Library Association (ALA)-accredited Master of Library and Information Studies (MLIS) degree (and its variants), the value it brings as a professional degree, and how and the extent to which degree holders contribute to the future of our service communities – be they schools, campuses, a neighborhood, a city, or something else. Key questions one might ask include:

- What is the value of an ALA-accredited MLIS degree?<sup>1</sup>
- What aptitudes, competencies, and abilities do ALA-accredited MLIS-holding professionals possess that are unique to those degree holders?
- What set of values to ALA-accredited MLIS-holding professionals hold that enable them to serve their respective communities in ways that other professional degree holders cannot?

This white paper seeks to provide some answers to these questions in the context of an evolving information, technology, and community landscape.

As we ask these questions, the context in which libraries present themselves to the public they serve and decision-makers is also changing; as is the narrative regarding the value of libraries – and professionally trained and credentialed librarians – for the communities that they serve and librarians themselves. Though in its initial stages, the library community is shifting its narrative from one of output measures from “we are valuable because we are used” (e.g., circulation of materials or visits), to one of “we are valuable because we make a difference” (e.g., outcomes and impacts in such areas as learning; traditional, digital, and information literacy; economic development; inclusion) (ACRL, 2016; PLA, 2016; AASL, 2007; ALA, 2015a).

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<sup>1</sup> This paper focuses on the ALA-accredited MLIS degree. School librarians, however, may also be credentialed through a master's degree with a specialty in school librarianship from a program recognized by the American Association of School Libraries (AASL; <http://www.ala.org/aasl/education/caep/programs>) in an educational unit accredited by the Council for the Accreditation of Educator Preparation (CAEP; <http://www.caepnet.org/>).

This is a complex evolution that entangles the notions of *value* and *being valued*. Value has been variously defined, for example, to mean economic and financial worth; utility; the quality of being excellent (Rescher, 1969; Zimmerman, 2002). For some, the notion of value is more philosophical, arbitrary, and difficult to define in specific terms (Najder, 1975). Regardless of how libraries and library professionals might define or determine their value, there is the corresponding notion of *being valued* – by our funders, communities, policy makers, and others. Time will tell whether this shift in focus by libraries – from the amount of service libraries and librarians provide, to the impact of those services – will create a new value proposition for libraries and librarians that leads to being more valued by society, policy makers, and the communities that they serve.

## The Ongoing MLIS Debate

The topic of the changing nature, or lack of changing nature, of library and information studies (LIS) education and the need for professional staff who hold an accredited MLIS degree is a nearly perennial discussion in the library community. The field has a long history of self-reflection and self-doubt about the education programs that prepare librarians for librarianship, and what competencies, abilities, and attitudes that professional librarians should hold. This is despite the existence of formalized education programs for librarianship that date back over 100 years in the United States, and that the standardized MLIS degree and its name variants – in large part due to the ALA accreditation process – are now over 50 years old.

In 1985, a library school professor created “An Anthology of Abuse” documenting the different criticisms of library education’s ability to prepare information professionals, ranging from the perceived limitations of the faculty to the perceived limitations of the curriculum to the perceived limitations of the students (Rothstein, 1985). The list was expanded only a few years later (Bohannon, 1991). In more recent years, books have suggested that the problems of library education are rooted in a lack of attention to theory (Cossette, 2009), too much attention to theory (Gorman, 2003), too much emphasis on research (Cox, 2010), and the design of the MLIS degree itself (Swigger, 2012). An argument has also been put forward for an apprenticeship model outside of the university (Dilevko, 2009).

Blogs and social media have expanded the discussion. *Annoyed Librarian* (<http://lj.libraryjournal.com/blogs/annoyedlibrarian>) also critiqued the value of library school (2010, *Annoyed Librarian*). *Hiring Librarians* (<http://hiringlibrarians.com>), a blog created as a result of a “frustrating job hunt,” has discussed LIS education and/or library schools many times. The library school student-created and run blog, *Hack Library School* (<http://hacklibraryschool.com/>) was founded to create a venue in which current students could learn how to best “hack” their own education as response to what students perceived as gaps in their instruction or degree requirements. But, even if there wasn’t a proliferation of published discussion of the degree, simply asking a group of MLIS students what they think of the degree will result in at least hearing the opinions stated above and additional critiques.

The ALA and Association of Library and Information Science Educators (ALISE) have also had a series of ongoing discussions regarding future of LIS education including the Library Education Task Force Report (ALA, 2009b), a publication of the ALA's *Core Competencies of Librarianship* (ALA, 2009a), a set of revised ALA Accreditation Standards (ALA, 2015b), the Institute of Museum and Library Services-funded project at Simmons University ("Envisioning Our Information Future," 2015), and the University of Maryland's *Re-Envisioning the MLIS* initiative (Bertot, Sarin, & Percell, 2015).

So where does this leave librarians? What is it about the ALA accredited-MLIS degree that has an impact on the communities that libraries serve? The following sections articulate selected areas and ways in which accredited-MLIS degree programs prepare information professionals for librarianship that make the degree holders uniquely qualified to serve their library's communities.

### **The Values of the Profession**

Since the creation of truly public libraries in the 18th and 19th centuries the institutions have served as places to spread knowledge, promote education, and perhaps most importantly, to promote community engagement. Long before public education was common place in the US, public libraries collected books and provided resources for childhood (and adult) learning as well as the arts (Davies, 1974; DuMont, 1977). At their heart, libraries are designed to "level the playing field" and provide opportunities for learning and sharing information in safe and welcoming setting. They are at the center of social justice, change, and innovation, offering services that engage, educate, and empower their users.

The [ALA Code of Ethics](#) and [ALA Policy Manual](#) are central documents that govern and define the roles of libraries and librarians (ALA, 2008; ALA, 2013). These documents help to define and enable instructors to teach the true values of librarianship. These documents, however, are just a piece of the process of instilling the core values of librarianship into practitioners; ALA-Accredited MLIS programs ensure that these principles and values are ingrained in the subsequent generations of librarians. Certainly these programs help students learn about information retrieval, information organization and architecture, and about how to best meet user needs, but they do much more than teach skills. The MLIS education instills librarians with the values and principles of libraries and librarianship; values that are distinct from other related disciplines. These programs ensure that librarians understand the history of their own profession and the powerful values that are part of it, such as:

- **Inclusion:** Ensuring the availability of information services that can be accessed by people of all ability levels, backgrounds, or needs.
- **Privacy:** Ensuring the privacy of users and staff in terms of the information they seek, use, or share.
- **Equity:** Providing access to needed resources and creating resources needed by the community without regard to race, gender, ethnicity, ability, etc.
- **Open government:** Providing public access to government information is an essential part of creating and informed citizenry. Libraries are often the only

location where people can access government information on freely available computers or in print resources such as those in Federal Depository Libraries.

- **Civic engagement:** Providing access and meaningful learning opportunities that foster participation in issues or processes affecting the community served whether at the hyper-local or the national level.
- **Human rights:** Supporting and promoting human rights either directly and indirectly by providing community members with the skills and resources necessary to pursue greater equality in a variety of arenas.
- **Intellectual freedom:** Including the prevention of censorship and the inclusion of information that covers the spectrum of information or beliefs on a topic or idea without regard to one's own beliefs.
- **Democratic values and ideals:** Teaching about and providing learning opportunities regarding American democracy and democratic ideals. Libraries provide access to resources that provide and foster to creation of "rational, reasoned, and organized discourse" that alleviates social problems, and contribute to a healthy democratic society (Buchman, 2003, 2009). They are filled with "resources and channels of information" that provide "a wide range of knowledge and opinion" designed to support the literacy and intellectual growth of community members (Line, 2003, p. 386). Some libraries go even further and offer direct support for immigrants trying to become American citizens through the offering of legal resources, new immigration centers, and even provide "cultural navigators" who help new or soon-to-be citizens understand nuances of American culture (Dankowski, 2015; New York Public Library, 2016; Hartford Public Library, 2016).

These values, and others (ALA, 2004), are embedded in the profession of librarianship and LIS education as a discipline. Instilling "the essential character of the field of library and information studies" and "the philosophy, principles, and ethics of the field" (ALA, 2015b, I.2.1 and I.2.2) are required student learning outcomes and are directly embedded into the education of future librarians. MLIS programs are where future librarians learn the history and culture of librarianship and are infused with the ethics and values of librarianship. They are essential for ensuring that the profession stays true to its roots in information sharing and intellectual freedom, and thus are a community-based resource for extending these values throughout the country.

## **Understanding Information and Information Theory in Everyday Life**

Libraries and information centers are unique in the volume and variety information needs that they serve. A public librarian might start their day doing a baby story time, making sure to include hand signs and sounds to catch the attention of their tiny patrons. A few hours later they help an elderly patron file their taxes; they then help a teenager write their first research paper. To serve this mixture of patrons, be prepared to work in the huge array of libraries and information centers, and to be able to continually learn and update their own information retrieval skills librarians must be trained in information theory including, information seeking, retrieving, and processing behavior as well as the learning or knowledge creation process. Information seeking and the basics of learning theories can be found at the heart of all MLIS programs.

MLIS students learn what is essentially the canon of information seeking or information behavior models. Wilson's Model of Information Behavior, Ellis's Model, Dervin's, and Khulthau's (among others) are familiar to most, if not all, MLIS trained information workers (Wilson, 1999). They learn about the subtle variations in the theories and learn how to incorporate them into their work whether it be in a middle school, college library, public library, or other information center. Like many canonical texts and theory-based coursework MLIS students/graduates often don't realize the importance of this education (as indicated by the everlasting theory versus practice discussions) until long after the coursework is completed. There is an "a-ha moment" for many when working with a patron, creating an information literacy tutorial, watching someone search for information, or in seeking information themselves they can "see" the information retrieval process in real time.

Information theory and information seeking behaviors are an essential and unique skill required of librarians as emphasized by their required incorporation into LIS curriculum and their representation in ALA and ALA Divisions resources standards and resources for practitioners. Examples include:

- [ALA Accreditation Standards](#) that are used to construct and evaluate MLIS degree programs, require that MLIS programs "emphasizes an evolving body of knowledge that reflects the findings of basic and applied research from relevant fields" and "integrates technology and the theories that underpin its design, application, and use" (Standards II.2.2 II.2.3 respectively). These standards cannot be achieved without incorporating information retrieval and processing into the curriculum.
- The [ALA-AASL Standards for Initial Preparation of School Librarians](#), which apply to all master's programs that prepare school librarians in the preK-12 setting.
- The [ALA Policy Manual](#) lists information organization and reference and user services (among others) as core competencies for graduating from MLIS degree programs.
- Even fulfilling the [ALA Code of Ethics](#) requires that there be an understanding of how users access information.

Many ALA Divisions have created their own standards and competencies that also incorporate the need for information seeking and information processing behavior at their core, including:

- The first three of the [American Association of School Librarians \(AASL\), Standards for 21st Century Learners](#) "inquire, think critically, and gain knowledge;" "draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge;" and "share knowledge..." are all elements of information seeking behavior, and the ability for a librarian to foster them is enhanced through learning information theories in the MLIS coursework.
- The [Association of College and Research Libraries' Framework for Information Literacy for Higher Education \(2015\)](#) and [Information Literacy Competency](#)



[Standards for Higher Education \(approved in 2000, rescinded 2016\)](#), both of which have been used to create information literacy instruction in many libraries in higher education institutions also reference the necessity of understanding information seeking and information processing and the need for librarians to understand and be able to adapt their instruction (formal or informal) to the needs of specific users and/or user groups in order to achieve the standards and best serve their students.

- The [guidelines](#) created by and much of what the [Reference and User Services Association \(RUSA\)](#) does, is rooted in the idea that users have information needs that should be satisfied according to individual or group needs and processes. To achieve this the librarian must first understand how information retrieval and processing occurs and how this can differ from user-to-user.

These standards are designed to provide MLIS degree holders with the requisite foundational skills to understand information problems and how to assist individuals in resolving their information needs whether they understand what those needs might be from the outset or not.

### **Meeting Information – and Other – Needs**

A foundational aspect of MLIS education is reference. Launched as a way to elicit the information need(s) of any individual that a library might serve, librarians are expected to master the skill of linking the information need(s) of an individual with an appropriate information resource (Ross, Nilsen, & Radford, 2009). Over the years, reference interactions have expanded beyond in-person exchanges to include phone reference, e-mail, and interactive digital reference services such as chat and instant messaging (Ronan, Reakes, & Ochoa, 2006; Ruppel & Fagan, 2002).

The aforementioned Reference and User Services Association (RUSA) has over the years developed and updated its guidelines for the performance of reference services (RUSA, 2011). While the guidelines provide details on how best to engage in reference services, they in essence articulate a core set of skills, abilities, and attitudes that can create a foundation for information engagement with users that extends beyond a simple information query. More specifically, the guidelines suggest that librarians should be able to:

- Communicate clearly;
- Respect the individual and engage in non-judgmental objectivity;
- Elicit the user's information need through an iterative exchange;
- Focus on meeting the information need;
- Ensure individual privacy and confidentiality;
- Ascertain whether the need requires additional support/assistance from other sources (e.g., government agencies, non-profits); and
- Ascertain whether the information need was met.

These core abilities are essential, as reference – or meeting the need of an individual – has expanded beyond information. This expansion increasingly includes the resolution

of life issues such as securing/applying for health insurance, applying for government benefits, or seeking assistance with employment (Westbrook, 2015; Shelton & Winkelstein, 2014; Bertot, et al., 2006). And while these life issues have an embedded information need, they require much more complex and iterative interactions through which librarians can ascertain the need to the extent possible and how best to meet it – often engaging resources and assistance from service providers beyond the library.

The ability of librarians to meet these challenging and often complex needs of individuals is firmly rooted in the reference interview (whether this interview take place in a formalized ‘reference’ interaction or not), a skill that is extensible, versatile, and unique to credentialed librarians.

### **Focus on Multiple Literacies**

Libraries and librarians of all types engage in a range of instructional activities, services, and resource provision focused on multiple forms of literacies such as early childhood, youth, information, and increasingly, creation. The combination of the library’s environment, the library space, trust, and librarian expertise create a particularly rich and conducive environment for literacy-focused activities (CLIR, 2005; Beard & Dale, 2010).

#### *Early Childhood and Youth Literacy*

Public libraries in particular have focused on early childhood literacy for decades. The focus, however, is not just on facilitating reading, but also the development of foundational skills such as (Burns, Griffin, & Snow, 1999):

- Phonological awareness;
- The relationships between speech and print;
- Vocabulary development;
- Understanding narrative;
- Listening; and
- Oral language.

These efforts contribute to the ability of students to enter schools prepared and ready to learn, but also provide a foundation for a lifetime of learning that contributes to social and economic development (Carroll, 2010). More specifically, research demonstrates that early literacy efforts :

- Expand vocabulary and writing skills;
- Promote healthy social and emotional development;
- Promote longer attention spans, promoting better retention of information in school;
- Promote positive interactions between infants and caregivers;
- Foster enhanced imaginative and critical thinking skills; and
- Develop enhanced memory and higher levels of concentration (Nores & Barnett, 2010).

Further, early literacy efforts promote the enjoyment of reading and positive experiences around and encompassing literacy (Colgate & Ginns, 2015).

Public libraries continue early childhood literacy efforts as children mature through summer reading programs that target youth and young adults. School libraries play an integral role in youth literacy intended to support a variety of learning within the K-12 environment (Gretes, 2013). School libraries expand upon and enhance the literacy skills articulated above as children progress through their respective grades. School libraries provide, for example:

- Increased engagement with classroom-related texts and ideas;
- Reading comprehension;
- Strategic reading skills development; and
- Integration of literacy initiatives with the curriculum and learning objectives/outcomes.

It should be noted that academic libraries also provide literacy services and resources (Roselle, 2008).

### *Information Literacy*

Information literacy is the set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning. More specifically, individuals who are information literate are able to (<http://www.ala.org/acrl/standards/ilframework>):

- Determine the extent of information needed;
- Access the needed information effectively and efficiently;
- Evaluate information and its sources critically;
- Incorporate selected information into one's knowledge base;
- Use information effectively to accomplish a specific purpose; and
- Understand the economic, legal, and social issues surrounding the use of information, and access and use information ethically and legally.

Research in academic libraries shows that information literacy instruction and services provided by librarians strengthens general education outcomes such as inquiry-based and problem-solving learning, including critical thinking, ethical reasoning, global understanding, and civic engagement (ACRL, 2016). Similar results have been found in research conducted in school and public libraries (Lance & Kachel, 2013; Roman, Carran, & Fiore, 2010).

### *Other Literacies*

Beyond what some call traditional literacies, libraries also serve to promote newer forms of literacy and creativity. The clearest example of this is the involvement of libraries in

the creation and proliferation of makerspaces. Makerspaces are informal learning environments where users can participate in activities ranging from design, to fine art, to building, and problem-solving. They're spaces that "...target a unique package of complementary 21st-century skills and aptitudes such as creativity, innovation, transmedia navigation, visual literacy, and (if based in technology) computational thinking" (Bowler, 2014). These kinds of informal learning opportunities are essential in fostering a culture of lifelong learning and set children and adults up for future success. Research also suggests that informal learning spaces "...led to wider community involvement and activism," and "often started people on a continuing learning path by helping them become confident and successful learners" (McGiveny, 1999). These spaces are designed to foster creative thinking and problem solving and are reflective of the shift in the economy from one of direct production to one more rooted in startups and entrepreneurship.

### **Learning and Collaborative Spaces**

Learning can take many forms and occur in a range of settings, including informal learning spaces such as libraries. Our understanding of learning, the distinction between formal and informal learning, how learning spaces facilitate different types of learning, and the formats and approaches through which learning can occur continue to evolve and have a substantial impact on the ways in which information professionals and organizations can enable and enhance learning and education. Looking to the learning sciences, we see that learning is a multi-dimensional activity that includes:

- **Conceptual understanding:** an understanding of the topic or concept.
- **Interest:** an interest and desire to learn about the topic or concept.
- **Social interactions:** cultivating social relationships during the learning process.
- **Personal connections:** connecting the concept or topic to the individual learner's experience.

Research and practice show that effective learning and education need to take place beyond the classroom, and that libraries in particular are key to education in their communities (Gross, 2013). Out-of-school-spaces (sometimes referred to as "third spaces") – including libraries, archives, and museums – have a tremendous opportunity to help individuals develop a broader ecosystem of learning and education, and to help students "practice and develop" as well as "identify and explore."

Libraries, for example, are ideal learning and education spaces because they:

- Are open and inclusive spaces that encourage exploration;
- Already focused on connecting people and communities to resources they want and need;
- Have existing tools, resources, and skilled staff; and
- Provide interest-based learning opportunities.

Librarians have a particular opportunity to foster learning by attending to an individual's particular interests, needs, and educational goals – by connecting individuals to appropriate resources, connecting their interests and values to formal learning opportunities, and developing social connections to peers with similar interests, which can promote further exploration.

Librarians play critical roles in learning from cradle to grave. A particular strength of librarians, however, is their focus on youth learning and education – including pre-k and “readiness to read,” working with youth in schools, enhancing the understanding of primary data/information sources including archival materials, facilitating learning in libraries through making, STEAM (STREAM), coding, and a range of other activities. These skills are vital to promoting lifelong learning, as well as providing a foundation for a range of “readiness to learn” abilities.

### **Meeting Technology Needs and Competencies**

Society has moved rapidly to the use and adoption of a range of Information and Communication Technologies (ICTs) in all aspects of everyday life. The ability to use ICTs is increasingly as important as reading and writing, and ICT-enabled communication (e.g., Facebook, Twitter, blogs) serve as a primary means of knowledge exchange and interaction for many. Moreover, increasingly the ability to succeed economically and socially is embedded within digital content that requires both information and digital literacy skills to extract (UNESCO, 2005; 2010). The increased reliance on ICTs for development increases the risk of exclusion -- of both individuals and communities (Bertot, 2016).

The Public Libraries and the Internet and Public Technology Funding & Technology Access Surveys (PLFTAS, (<http://plinternetsurvey.org>), and more recently the Digital Inclusion Survey (<http://digitalinclusion.umd.edu/>), have chronicled the involvement with and use of the Internet in public libraries since 1994 (Bertot, et al., 2015). In the over 20 years of these studies, libraries have emerged as community spaces that in part provide:

- Access to technology infrastructure (e.g., devices, Internet connectivity);
- Access to technology-enabled services and resources (e.g., e-books, licensed databases, educational resources);
- Access to new and emerging technologies (e.g., 3D printers, mobile devices);
- Access to technology instruction; and
- Access to, facilitation of, and use of digital government services and resources (e.g., immigration, health care, social services).

Libraries have traditionally been early adopters of technologies (such as the Internet, WiFi, online resources, and search technologies) for both back office as well as public facing services. Moreover, librarians often serve as intermediaries between users with needs (i.e., needing health insurance) and service providers (i.e., health care exchanges).

With their technology skills, understanding of information resources and digital content, an understanding of their users and communities, and public service outlook, librarians are critical to ensuring digital inclusion and readiness in the communities that they serve. Librarians are uniquely qualified and trained to:

- Build and implement a robust 21st Century technical infrastructure that includes broadband connectivity, multiple device types (e.g., mobile, computing), WiFi, WiFi hotspots, 3D printers, and more that fosters innovation, creativity, entrepreneurship, and inclusive access to technologies.
- Design technologies that meet individual and community needs that can include design thinking methodologies; a user-focused approach; and inclusive design that can ensure access to technologies to individuals with a broad range of abilities, needs, and potential barriers to technology use.
- Design technologies that are adaptable over time to ensure continued use, usability, and functionality.
- Implement technologies with their communities in mind. Librarians begin with inclusion and view access to technology and the Internet as a right, putting into action inclusive ICT principles.
- Ensure access to Internet- and technology-enabled resources such as e-books, databases, and a range of increasingly digital content.
- Offer instruction (digital literacy) on multiple technology-related topics such as basic computer and software use, how to navigate the Internet, new and emerging technologies, how to develop websites, safe Internet surfing/privacy, and digital content creation.
- Understand how information is organized how technology can be applied to access, extract, and interact with a range of information resources to meet individual and community needs.

Librarians realize that, in order to ensure digital inclusion and readiness, they need to possess technology skills to build, develop, and implement technologies; create and make available digital content; possess usability, functionality, and accessibility knowledge; understand individual and community needs, and how ICTs can help meet those needs; develop cutting edge resource technologies in such key areas as interfaces, resource locator, aggregation, information sharing, and other critical areas of facilitating access to technology-enabled content.

To be sure, there are other degree programs that can provide technical proficiency such as computer science, information systems, business, engineering, human-computer interaction, and telecommunications. But no degree other than the MLIS provides a focus on the combination of people, communities, technology, inclusion, and information.

### **Facilitating Open Data and Open Government**

From open government to big data to interactive online services, communities around the world are increasingly relying on Information and Communications Technologies (ICTs) to:

- Engage their residents;
- Reinvent the ways in which governments function;
- Rethink how government, civic institutions, and residents interact;
- Create new approaches to policy- and decision-making; and
- Create new paradigms for the delivery of community information, services, and resources.

Communities face opportunities and challenges in many areas, embodied by the United Nation's recent adoption of its 17 Sustainable Development Goals (SDGs, <https://sustainabledevelopment.un.org/sdgs>). Areas of focus include education, health and wellness, workforce and economic development, inclusion and equity, and the environment. At the same time, governments, libraries, and other organizations have fiscal constraints on their ability to address these challenges and opportunities. Moreover, journalism – particularly investigative journalism that focuses on opening local government – has been shrinking (FCC, 2011). Through a combination of open government, open data, and civic engagement, however, governments, citizens, civil society groups, and others are creating openness, transparency, and reinventing the relationship between governments, communities, and the governed by developing crowdsourced and other innovative solutions for community advancement. Underlying this reinvention, innovation, and openness is data – particularly local data such as housing, air quality, graduation rates, literacy rates, poverty, disease, local government, and more.

Though data (via large-scale national datasets such as Census, Bureau of Labor Statistics, Environmental Protection Agency, Centers for Disease Control that have varying levels of local granularity – or more local data such as city/county/town, neighborhood) have existed in key domain areas for some time, newer data integration capabilities and analytic techniques enable novel ways of viewing and analyzing data, and significantly, informing policy-makers, decision-makers, stakeholders, and citizens about their communities and potential ways to resolve challenges, seek opportunities, and foster greater openness and transparency. Often referred to as Big Data, the ability to harness geo-spatial data, chronic disease data, literacy data, and others to create data visualizations, interactive map-based analysis, and more can often shed light on critical community needs, gaps, and solutions. Big Data, however, are often manifestations of smaller localized datasets aggregated into larger and often more complex data.

But in order to engage in these data science efforts; create analytic tools; and foster civic engagement, there are underlying needs such as, but not limited to:

- Central data repositories, where data are stored, maintained, and catalogued;
- Data standards, to which collected data adhere;
- Data communities, which will collect, maintain, and curate data;
- Effective information structure/ecology, through which to foster data communities, engagement, and use;
- Awareness of frameworks for openness and transparency;

- Awareness and understanding of ethical and privacy implications for the collection, management, and storage of Big Data; and
- Awareness, at the organizational, neighborhood, and individual levels, that data affect their daily well-being and functioning.

In short, data – and their analysis – are increasingly central to better understanding and improving the communities in which we live. Libraries and information organizations play an important role at the intersections of government, civic organizations, neighborhoods, and the public – thus making them critical elements of community information and data ecosystems.

Over the past several years there has been a steady increase in media and scholarly attention given to application of data analytics undertaken to strengthen communities, the development of open and transparent government at national and international levels (see the Open Government Partnership: <http://www.opengovpartnership.org/>), and the emergence of Smart Cities and communities. Additional attention has focused on the diminished capacity of local investigative journalism (FCC, 2011). The focus on Big Data and Smart Cities, however, has centered on the efforts of large metropolitan areas, use of vast data sets, and large-scale open data initiatives. While important, this work overlooks the fact that many communities operate on a much smaller, “local”, scale. In the US alone, there are over 18,000 cities, towns, and villages, many of which lack the population or capacity to engage in data initiatives using the strategies used by larger cities, national governments, and international NGOs. For every San Francisco there are thousands of smaller cities and towns, each of which has a range of local data (what we might call Local Big Data) – agricultural, cultural, community, historical – or the need for localized data drawn from larger national and international datasets.

While smaller communities often lack the resources, personnel, and infrastructure to fully realize the potential of Local Big Data using the same strategies employed by larger cities, there are over 16,700 public library buildings across the US, most of which are in small and rural communities. Factor in school and academic libraries, and there is an infrastructure that communities can leverage as they pursue avenues for innovation, entrepreneurship, and community engagement and improvement. Although libraries are not the first organizations that come to mind in discussions of Big Data, they have a long history of working with community members to make use of information resources to meet their individual and community needs, as well as fostering openness, transparency, and democratic engagement. This, coupled with the growing role for libraries in the dissemination of government data and provision of public services, offers significant opportunity for libraries to help their communities realize the potential of Local Big Data.

In addition to the roles as community open data hubs, libraries and librarians can serve critical community roles in:

- Data stewardship, including areas of data management, organization, archiving, and storage;

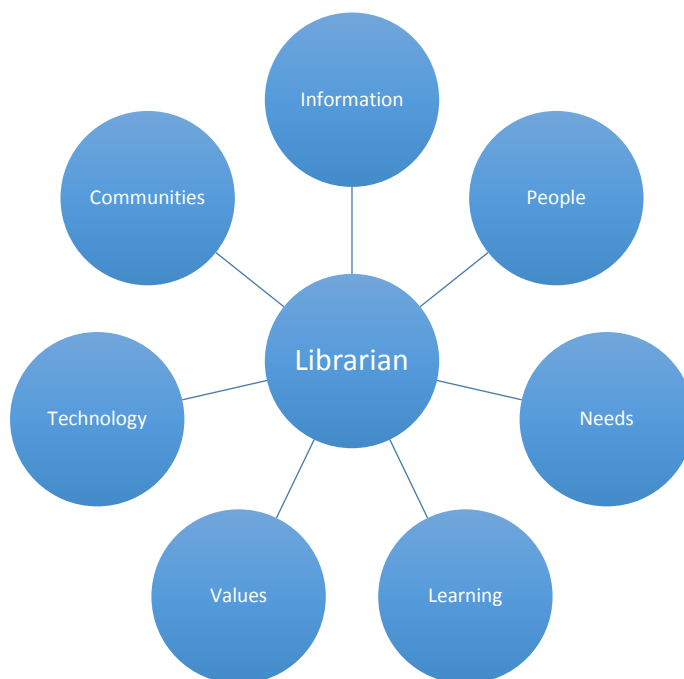


- Data cleaning, including helping with coding, cleaning, and other preparatory activities designed to prepare data for use;
- Data analytics, including helping analyze and interpret data analysis results;
- Data visualizations, including approaches and techniques designed to represent analyzed data for public consumption, policy making, and other activities; and
- Data privacy, security, and ethical practices, including ensuring best practices designed to maintain the privacy of individuals and security of data.

Libraries and librarians can be a critical resource in building data communities and local data infrastructures designed to facilitate community engagement and progress towards the SDGs as appropriate within each community.

## Discussion and Conclusion

The library as place can be many things to many people – a welcoming space; a place of learning; a means to bridge the digital divide; a place in which everyone is equal; and a place which to make, create, and experiment. But what makes that place a *library* is the credentialed librarian. There is no other professional degree program that focuses on the combination of information, people, needs, learning, values, technology, and communities (see Figure 6).



**Figure 6. The Librarian as Catalyst.**

Ultimately, what makes a credentialed librarian valuable to the community that s/he serves is his/her ability to:

- **Inform.** Librarians are important conduits to the information resources that people need. They scout out the options in an increasingly complex information landscape, find the best resources to meet their community's needs, curate them, organize them, and make them easily accessible in a variety of formats and to a variety of users.
- **Facilitate.** Whether it is learning, research, updating one's skills, seeking a job, finishing a degree/certificate program, or simply for leisure, librarians actively facilitate meeting an individual's needs through information, resources, and services at the very moment of the need.
- **Enable.** Librarians go into our communities and find those who would benefit from the resources, services, and information that we as professionals know about, but they may not.
- **Accept.** Librarians neither judge the person nor the need. We simply meet the individual at the point of need without asking why the need exists.
- **Equalize.** Librarians ensure that all individuals – regardless of background, ability, means, or any other factor – have access to the information resources that they need when need them.
- **Serve.** Librarians value service to the public and their communities. Librarians are imbued with a public spirit designed to provide an overall positive experience to their users.
- **Infuse.** Librarians are values-driven professionals who engage in service activities, provide information, and seek to help individuals and communities meet their needs while upholding a core set of democratic and social values that guarantee access to information and opportunity for all.
- **Instruct.** Librarians create a broad range of learning opportunities to the communities that they serve through their programs, materials, training, technologies, and resources.
- **Lead.** Whether to ensure equity, access to technology and connectivity, access to materials, engage communities, preserve the record, ensure an open and transparent government, develop emerging technologies, and more – librarians take leadership roles around availability of, access to, and dissemination of information.

These attributes are uniquely situated to the recently articulated SDGs by the United Nations (United Nations, 2015). The 17 identified SDGs identify our society's grand challenges – e.g., equity, inclusion, ending poverty, building resilient communities, access to high quality education, health care, environment, civic engagement/open government – all have substantive underlying information components to them, and presume the ability of individuals to access, engage with, and use information to further their own goals as well as those of their communities. In short, credentialed librarians are at the very heart of helping communities achieve sustainable growth, communities, and societies.

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