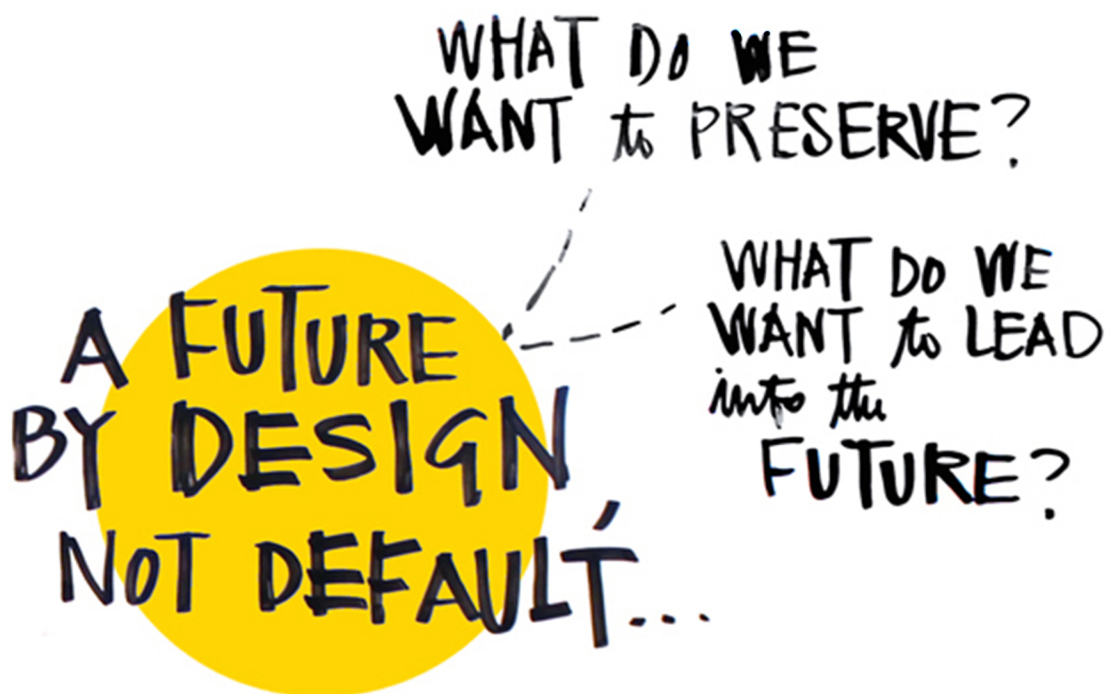


ENVISIONING OUR INFORMATION FUTURE AND HOW TO EDUCATE FOR IT

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Hindsight as Foresight: The Future of LIS Education Contextualized

A new form of Artificial Intelligence is about to transform our world. Now, anyone with a smartphone can have real-time universal language translation, for free. Soon, self-driving cars and trucks will be ubiquitous, with Tesla, Google, Uber, Apple and many traditional car companies competing to provide the self-driving fleets that are expected over the next five to 10 years. Similarly, the application of AI technologies will make health care proactive, predictive and personalized. Over the coming years, AI will touch every industry, from finance to farming, from aerospace to manufacturing. (Jacobs, Poutanen, Zemel, Hinton, & Clark, 2017)

While the description of the rapidly evolving field of Artificial Intelligence (AI) penned by Jacobs and colleagues (2017) post-dates the start of the initiatives discussed in this White Paper by nearly three years, it evokes the same fundamental question that motivated the Co-Principal Investigators, Abels, Howarth, and Smith, to seek funding from the Institute of Museum and Library Services (IMLS) to undertake The #InfoFuture Project (<http://infofuture.simmons.edu>). Given the unrelenting rate and broadening scope of change brought about by new and evolving information technologies, media formats, and ways of connecting and communicating – AI being seen as one of the most potentially disruptive of contemporary change agents – what is the future of library and information science, and how do we educate for it? Moreover, what knowledge, skills, and abilities (KSAs) will our graduates require to assume a full range of careers and to become leaders in that evolving information landscape, who will teach them, and how will they be taught?

Motivated, in part, by uncertainty and an inclination to react, while also sensing an opportunity to act deliberately, and to engage in crafting an innovative curricular path forward, we determined a compelling need to convene a session where different perspectives could be mobilized to envision an information future and how to educate for it. The National Planning Forum (the Forum), funded by IMLS, convened a diverse group of stakeholders in January 2015 to develop the framework for re-visioning LIS education and to begin action planning within that framework. To achieve this, we brought together fifty-three participants ranging from directors of libraries, museums and archives, to educators, digital humanities scholars, content providers, futurists, and information technology entrepreneurs at various stages of their careers. The participants at the forum raised some concerns and identified key themes to be explored in greater depth. Towards the end of the Forum, they challenged us to develop proofs of concepts to address the key themes.

Due to their complexity, the proofs of concepts are at different stages of completion. Within this White Paper, they are framed relative to the questions posed earlier, and from our perspectives as LIS educators, as follows:

- What will we teach?
- Who will we teach?
- Who will teach?
- How will we teach?

While we present each of the proofs of concepts with reference to a question, we do not see them as answers. Rather, we offer them as exemplars, as a set of experiments, or even a series of provocations to be examined, assessed, and refined by others. In a sense, each represents qualitative research with a number of innovative outcomes that invite further development and new ideas.

What will we teach?

Stimulated by an activity in which participants considered what themes were decaying, dominant, and emerging in importance, the Forum fostered extended discussion on what should be taught in degree programs preparing information professionals for the future. As participant Deanna Marcum (2015) observed: “Perhaps the diverse backgrounds of the participants guaranteed the utter impossibility of developing a general curriculum that will meet all needs” (p. 2). She also expressed concern that the “enormous changes occurring in research libraries are not matched by the pace of change in library program curricula” (p. 4).

While discussions at the Forum did not lead to a consensus on what should be taught, it was evident that seeking more input from those working in the field was likely to be a productive strategy for developing a more detailed understanding of needed knowledge, skills, and abilities. Marcum endorsed this strategy from the perspective of the research library community: “If research library directors are to continue to count on the schools to produce students who can work in the transformed research institutions, it is imperative that we have meaningful conversations about expectations of the graduates of these programs” (p. 10).

Of course there is no dearth of published competency statements, as is evident from the compilation maintained by the American Library Association (2017), ranging from a statement of core competences to much more focused career paths such as electronic resources librarians and librarians serving children in public libraries. The *Competencies for Information Professionals* approved by the Board of Directors of the Special Libraries Association in 2016 is of particular interest for its distinction between core and enabling competencies. In this case six categories of core competencies are identified: Information and knowledge services; Information and knowledge systems and technology; Information and knowledge resources; Information and data retrieval and analysis; Organization of data, information, and knowledge assets; Information ethics. In contrast enabling competencies are defined as “essential competencies that are shared by professionals in other fields.” They are considered to be “vital for professional success and career development.” Nine areas are highlighted:

- Critical thinking, including qualitative and quantitative reasoning;
- Initiative, adaptability, flexibility, creativity, innovation, and problem solving;
- Effective oral and written communication, including influencing skills;
- Relationship building, networking, and collaboration, including the ability to foster respect, inclusion, and communication among diverse individuals;
- Marketing;
- Leadership, management, and project management;
- Life-long learning;
- Instructional design and development, teaching, and mentoring; and

- Business ethics.

The compilers note that the *Competencies* document can be used by “Library and information science educators, as a framework for developing their curricula.” Likewise the *Standards for Accreditation of Master’s Programs in Library and Information Studies* (American Library Association, 2015) have a standard that explicitly addresses this: II.4 Design of general and specialized curricula takes into account the statements of knowledge and competencies developed by relevant professional organizations.

Articles in the LIS literature periodically highlight competencies identified through selective data gathering such as this list of “top skills for tomorrow’s librarians” presented by Meredith Schwartz (2016), drawing on opinions of academic and public library directors and other thought leaders nationwide:

1. Advocacy/politics
2. Collaboration
3. Communication/people skills
4. Creativity/innovation
5. Critical thinking
6. Data analysis
7. Flexibility
8. Leadership
9. Marketing
10. Project management
11. Technological expertise

Other studies have a more detailed discussion of method. Laura Saunders (2015) used a series of focus groups to gather professional perspectives on needed competencies and found that her study participants emphasized the importance of a range of technical skills as well as soft skills including communication, customer service, flexibility, and a commitment to continuous learning. While such studies typically focus on those working in libraries, Melissa Fraser-Arnott (2017) expanded her identification of competencies to encompass records management, information management, and knowledge management, and Katherine Howard and colleagues (2016) looked at galleries, archives, and museums in addition to libraries.

In an effort to engage a wider range of information professionals and educators in more focused discussions of needed competencies, the project team used three different approaches to gather input:

- 1) In October 2015 at a session at the New England Library Association conference, participants, predominantly public and academic librarians from the New England area, responded to the questions: What will your organization need to do to be successful in 5 years? What knowledge, skills, and abilities will be required of your information professionals to help you get there?
- 2) In November 2015 at a session at the Association for Information Science and Technology conference, participants used the “emerging, dominant, decaying” framework to explore three topics related to curriculum and pedagogy: Information Technology Curriculum, Curriculum Focused on Cultural Institutions, and the Teaching/Learning Experience.

3) In August 2016 at a poster session at the IFLA World Library and Information Congress, attendees were invited to consider the question: What knowledge, skills, and abilities will be required of your information professionals to help your organization achieve its goals over the next 5 years? Fourteen options frequently mentioned in the earlier data collection were given as initial prompts, with the invitation to mark those that the participants agreed with and to add their own ideas. Figure 1 shows the poster with the responses.

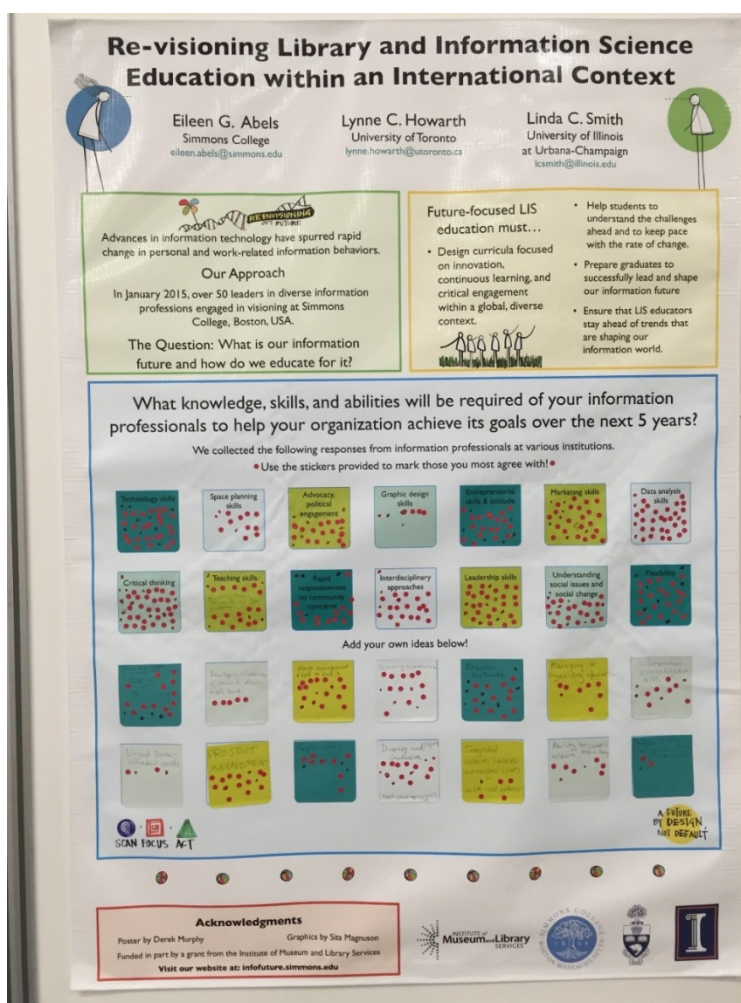


Figure 1. Knowledge, Skills and Abilities Needed for the Future.

The fourteen initial options presented on the poster included: Technology skills; Space planning skills; Advocacy, political engagement; Graphic design skills; Entrepreneurial skills and attitude; Marketing skills; Data analysis skills; Critical thinking; Teaching skills; Rapid responsiveness to community concerns; Interdisciplinary approaches; Leadership skills; Understanding social issues and social change; Flexibility. This is clearly a mixture of knowledge, skills, and abilities.

The poster attracted a great deal of activity, with the initial list of 14 expanding to 54 knowledge, skills, and abilities and a total of 649 “votes” on items in this expanded list. Participants could “vote” on as few or as many of the KSAs as they chose, without any requirement to order them

as to preference. Consequently, Table 1 reports on number of “votes”, but cannot add the perspective of percentage representation. Some further content analysis to group related items yielded 48 unique words or phrases.

The initial list of 14 attracted substantial numbers of votes, ranging from a high of 40 to a low of 7 (see Table 1).

Table 1. Ranking of initial list of knowledge, skills, and abilities

Knowledge, Skills, Abilities	Number of Votes
Critical thinking	40
Technology skills	36
Data analysis skills	33
Advocacy, political engagement	31
Leadership skills	31
Teaching skills	30
Marketing skills	30
Flexibility	29
Understanding social issues and social change	28
Entrepreneurial skills and attitude	25
Interdisciplinary approaches	22
Rapid responsiveness to community concerns	17
Space planning skills	13
Graphic design skills	7

Of great interest are those highly ranked knowledge, skills, and abilities that were added by participants and then voted on by others (see Table 2).

Table 2. Ranking of additional list of knowledge, skills, and abilities

Knowledge, Skills, Abilities	Number of Votes
Change management	28
Research methods	20
Design thinking	17
Project management	17
Scholarly communication	15
Diversity and inclusion	15
Cultural competencies	14
Copyright	11
Foreign languages	11
Innovation	11
Ability to relearn, keep on learning (updating)	10
Open science	9
Team work communication	9
Managing & organizing information	8
Listening	8
Collaboration	8
Born digital resources & preservation	7
Problem-solving skills	7
Partnership development & management	6

Fifteen items received 5 or fewer votes:

5 (Developing relationships with community official and/or boards; Integrated archives, libraries and museums (LAM) or GLAM – add galleries; Negotiation skills)

4 (Linked data – related skills; Human centred design skills for programmes & spaces; Creativity)

3 (Development of unique “content” to connect with patrons; Systems thinking; Service learning; Evidence-based practice)

2 (Compete with the user expectations of Google, Netflix, Amazon usability & experience; Online course instruction by information professionals & support to other teaching faculty)

1 (Open source and open access movement; Reflective practice; E-learning)

Reviewing these lists of knowledge, skills, and abilities can provide some insights into what is currently needed and valued in the workplace. Notably, “design thinking” emerged as one of the skills that participants valued.

As anticipated, some topics reflect needed knowledge in areas of growing importance: scholarly communication, copyright, open science, managing & organizing information, born digital resources & preservation, linked data. Curricula can be reviewed to ensure that such topics are included. There is an emphasis on an ability to collect and analyze data: data analysis skills, research methods, problem-solving skills, evidence-based practice. Not surprisingly, technology skills are emphasized, but should be coupled with ability to relearn and keep on learning (updating), given the continual changes in technology.

Collecting data at an international meeting is a reminder of the need to develop facility in working in a diverse and global context; understanding social issues and social change, rapid responsiveness to community concerns, diversity and inclusion, cultural competencies, and foreign languages were all highlighted as needed knowledge and skills. There is also recognition that professionals need to collaborate to be effective: teamwork communication, collaboration, partnership development & management, developing relationships with community official and/or boards, and integrated archives, libraries and museums (LAM) or GLAM were all cited as needed.

Interdisciplinary approaches were of interest. Courses generally taught in other departments may need to be integrated into LIS curricula, such as change management, project management, and marketing. Other valued attributes include advocacy, political engagement, leadership skills, entrepreneurial skills and attitude, negotiation skills, creativity, systems thinking, and innovation. Additional skills and abilities highlighted include critical thinking, flexibility, and listening. Participants also valued teaching skills, space planning skills, graphic design skills, and human centered design skills for programs and spaces as being relevant for at least some of their positions.

Referring back to the list of enabling competencies enumerated by SLA, critical thinking, flexibility, creativity, innovation, problem solving, relationship building, inclusion among diverse individuals, marketing, leadership, project management, lifelong learning, and teaching all appear again in the data gathered at IFLA.

Gathering lists of desired knowledge, skills, and abilities is only a first step. These need to be translated into areas for curriculum development. John Bertot and colleagues (2015) have done this following data collection as part of their Re-envisioning the MLS project, creating a table of areas for MLS curriculum development including technology, digital asset management, data, assessment and evaluation, policy, cultural competence, information needs, making, and change. Each content area is accompanied by a list of skills and areas for application.

Building on the experience of data gathering at IFLA, a team at Simmons College School of Library and Information Science has undertaken an ambitious skills and knowledge survey that reached 1117 stakeholders, including alumni, internship supervisors, and employers. The survey

sought to gather stakeholder input on which skills and knowledge areas are viewed as most important, both now and in the near future, distinguishing core (needed by all LIS graduates regardless of specialization) vs. specialized areas of knowledge, skills, and competencies only likely to be needed in specific positions or information settings. The survey encompassed 53 skills and knowledge areas in five categories--General, Communications, User Services, Management, and Technology. An executive summary of the results of the survey can be found in a blog post (Abels & Saunders, 2017). The survey has been administered through another LIS program and plans are underway to make the survey instrument available to other programs to enable data collection on an even larger scale.

Taken together, these desired knowledge, skills, and abilities pose challenges for LIS curriculum design. What is reasonably within scope for a graduate professional program? How could they be expressed as desired learning outcomes at the course and program level? These questions need to be explored as we continue to develop approaches to educating for our information future.

Who will we teach?

At the Forum a recurring theme was how do we attract and retain individuals who possess and/or can develop the knowledge, skills, and abilities identified as essential for future information professionals? (see Figure 2) This need has also been expressed in the LIS literature. Writing five months after the Forum, Sari Feldman and Hallie Rich (2015) observed (p. 37-38): “As the library profession transforms to respond to an increasingly high-tech/high-touch environment, the talents and skills embodied by all library professionals are necessarily changing. We need to recruit a more diverse and creative workforce by *starting to tell a different story* about the library profession and creating a pipeline of talent to deliver in the new service models for all library types.” [italics added]



Figure 2. Infographic on Attracting and Retaining Students.

Other authors noted the importance of making prospective students aware of the wide array of work settings open to LIS graduates. Speaking from the perspective of an LIS student working as a website project manager outside a library, Jane Greenstein (2012) expressed concern that LIS schools “don’t know how to court prospective ‘information’-oriented candidates properly” and recommended “a media campaign to ‘reposition’ its message and ‘rebrand’ its image” (p.

52). Melissa Fraser-Arnott (2015) points to a dearth of information on the experiences of LIS graduates who have pursued non-library roles and suggests that “the perceptions and practices of LIS graduates working in non-library and non-traditional roles may contribute to new conceptions of the LIS profession” (p. 301).

Recognizing the need to make the wide range of careers more visible, the project team launched a podcast as a proof of concept to support recruitment of students with more diverse backgrounds and interested in pursuing a range of career possibilities. *Beyond the Stacks: Innovative Careers in Library and Information Science* is a podcast series that profiles non-typical and “cool” positions held by individuals with MS-LIS degrees. The first several guests were also attendees at the January 2015 Forum, who, in turn, identified other potential interviewees. Podcast guests were also located through the Facebook group ALA Think Tank and *Library Journal’s* Movers & Shakers list. *Beyond the Stacks* launched in October 2015 with two episodes. Each season has four episodes for a total of sixteen episodes to date, with Season 4 ending in May 2017. Linked from <http://beyondthestacks.info/>, this series has been very popular. As of May 31, 2017, the *Beyond the Stacks* website had approximately 5,646 unique visitors and there were 348 subscribers to the podcast feed. This number has steadily increased over the course of time the podcast has been running. As of May 31, 2017, there had been a total of 5,991 downloads of all of the episodes. A promotional Trailer was published on September 28, 2016: <http://slis.simmons.edu/blogs/ourinformationfuture/2016/09/28/new-beyond-stacks-trailer/>

Episodes between October 1, 2015 and May 1, 2017 are listed in Table 3.

Table 3. *Beyond the Stacks* Episodes

Date	Guest	Position Title
October 1, 2015	Gemma Petrie	User Experience Researcher at Mozilla
October 1, 2015	Kimberly Silk	Data Librarian at the Canadian Research Knowledge Network
November 1, 2015	Miguel Figueroa	Director for the Future of Libraries at American Library Association
December 1, 2015	Erin O’Meara	Electronic Records Archivist at Gates Foundation Archive
February 1, 2016	Alex Wade	Director of Scholarly Communications at Microsoft Research
March 1, 2016	Henry Lowood	Curator for History of Science & Technology Collections at Stanford University
April 1, 2016	Eben English	Web Developer at Boston Public Library

May 1, 2016	Jason Griffey	Librarian Entrepreneur, Creator and Director of LibraryBox
September 1, 2016	Caryn Baird	News Researcher at Tampa Bay Times
October 1, 2016	Amanda Brennan	Community and Content Associate at tumblr
November 1, 2016	Jennie Rose Halperin	Communications Manager at Creative Commons
December 1, 2016	Tom Blake	Content Discovery Manager at Boston Public Library
February 1, 2017	Jenny Benevento	Taxonomist at Etsy.com
March 1, 2017	Titus Moolathara	Library Supervisor and Prison Services Coordinator at Free Library of Philadelphia
April 1, 2017	Liz Fitzgerald and Suzanna Urminska	Administrator and Librarian of the Culinary Literacy Center at Free Library of Philadelphia
May 1, 2017	Sarah Spira	Content Manager at American Cheese Society

These podcasts effectively share the experiences of LIS graduates working in novel or unusual roles. The interviews include consideration of the transferable competencies that allow LIS graduates to transition into these work roles, how these professionals developed the needed skills and competencies, the trajectories of their career paths, and the rewards of the work they are involved in. Such first-person accounts offer compelling material for recruitment.

Discussion at the Forum also highlighted the importance of recruitment and retention for diversity, especially students of color. As noted in the *Library Workers: Facts & Figures Fact Sheet* (AFL-CIO DPE, 2016), “The librarian profession suffers from a persistent lag of racial diversity that has little indication of abating.” While research reported by Kyung-Sun Kim and Sei-Ching Joanna Sin (2008) sought to assess efforts that LIS schools and associations have made to recruit and retain students of color and to identify effective recruitment/retention strategies, more research is needed to better understand the preferences and needs of different ethnic minority groups and to identify recruitment/retention strategies relevant to each group. This is a potential focus for future proofs of concepts in response to the question “Who will we teach?”

Who will teach?

Housed in graduate professional schools, LIS programs generally involve both full-time and adjunct faculty in teaching. While adjunct faculty are often employed full-time in libraries or other organizational settings, full-time faculty may be years or decades away from immersion in practice. Those currently in the workplace note the rapid pace of change. For example, reflecting on her experience in an academic medical library, Jane Blumenthal (2014) in an editorial on “Creating the future” remarks: “What do you do when you find out seemingly overnight that the roles you have been playing in your institution are no longer needed or valued? Adapt. Find new roles. Move away from activities that are not valued and embrace value-added activities that demonstrate return on investment. Move quickly and change direction on a moment’s notice. Never begin a sentence with ‘I didn’t go to graduate school to...’” (p. 2).

Given this context, participants in the Forum challenged full-time faculty to explore the opportunities for concentrated residencies as a form of continuing faculty professional development. One of the Forum participants, David Ferriero, the Archivist of the United States, offered to host a faculty member for a faculty residency as a proof of concept. The pilot was designed by the National Archives and Records Administration (NARA) staff with a focus on electronic records, an evolving area of practice. The two-week immersion program included seven days at NARA I and II in Washington, D.C. and Maryland as well as three days at the George W. Bush Presidential Library and Museum in Dallas, Texas.

Simmons faculty member Katherine Wisser, Associate Professor, Co-Director of the Archives/History Dual Degree Program and Director of the Archives Certificate Program, was selected to participate in the residency experience. Over the two-week period, she met with a range of staff filling different roles in relationship to electronic records who reflected on:

- What challenges are facing your unit?
- What is the nature of the work?
- What skills are needed?
- What are trends for the future?
- Have you identified any contrasts between theory and practice?
- Are there any special circumstances with government records?

The faculty member encouraged discussion of whichever aspect of their work the staff member wanted to emphasize.

Based on the pilot, the faculty residency model including a two-week immersion experience focused on a specific area can provide the faculty member with sufficient insights to assess how well the curriculum is preparing students for future work in the field. A possible refinement would have the first week of the residency provide a broad overview of the institution and the second week tailored to the faculty member’s area of expertise. Faculty residency programs can be held in any type of institution: academic libraries, archives of all types, special collections, special libraries, public libraries. The complexity and focus of the experience would vary with

the host institution. The schedule needs to include time to reflect and follow-up to dig deeper into an area as needed.

The outcomes from the residency will vary. From the proof of concept with NARA, the faculty member generated a list of needed skills, e.g., project management, social media skills, some coding experience, writing skills (including writing for the right audience). In addition, the faculty member identified the need for a course in government archives as an elective in the curriculum at Simmons.

To extend the impact of the faculty residency, approaches were sought to share what was learned. The faculty member made a presentation to her colleagues at Simmons. She also facilitated scheduling a follow-up web conference, involving faculty from Toronto, Illinois, and Simmons and an expert from NARA focused on customizing reference services to meet the challenges of electronic records and user needs. Faculty residencies thus can serve as a way of keeping colleagues updated on opportunities and challenges faced by professionals in real-world environments in order to better prepare graduates for professional work.

Such faculty residencies have the potential to foster a culture of practice-informed pedagogy. Another potential proof of concept was suggested in discussions with the project steering committee—creation of open educational resources involving collaboration between full-time faculty and knowledgeable practitioners in areas of emerging importance.

Another interesting proof of concept for promoting closer connections between researchers and practitioners has recently been funded by the John S. and James L. Knight Foundation, advancing innovation in public libraries through a residency program at the MIT Media Lab that will enable librarians and researchers to collaborate on projects. Librarians who participate in the program will spend two weeks at the Media Lab and Media Lab researchers will spend up to three months working at their partner library (<https://www.media.mit.edu/projects/public-library-innovation-exchange/overview/>).

How will we teach?

A theme throughout the Forum was how to engage in innovative pedagogy.

One idea proposed for a proof of concept was the Teaching Library, citing the example of the Teaching Hospital, which is integral to the preparation of physicians. This also raised the question of what is known about best practices for field experiences, with discussion at the Forum benefiting from examples drawn from libraries, archives, and museums, as well as possibilities for virtual field experiences.

An earlier study by Susan Searing and Scott Walter (2012) cautions that “prevailing practice is characterized by multiple forms of field experience; students’ lack of information about their options; unclear connections between field experiences and the content of LIS courses; and lack of communication between LIS educators and librarian site supervisors regarding the design and evaluation of student work.” To advance toward the concept of the Teaching Library, more focus on the design of field experience is needed. What constitutes a good host? What duration? How can they be made more integral to a student’s academic program? In both the face-to-face and virtual realms, proofs of concepts are needed to develop best practices.

Another possible interpretation of the Teaching Library concept is the potential development of cases, comparable to those used in the Case Study method in business schools.

Artist-in-Residence Programs and Curriculum Models

The theme of innovative pedagogy was further evidenced in the idea for an Artist-in-Residence (AIR) program. Jer Thorp, a software artist, writer, and educator, also a participant at the Forum, proposed a proof of concept for developing LIS curriculum around AIR programs in libraries, archives, and museums (LAM). In his article, drafted immediately following the Forum (Thorp, 2015), he issued a call to action, predicting that, someday, “every library, archive, and museum will have an artist-in-residence program.” Citing successful existing programs, including those hosted by the Internet Archive and the New York Public Library, he made a strong case for the artist residency as fruitful collaboration between two very different professional worlds with surprisingly compatible goals: “The focus here is on symbiosis, on the creation of a relationship where the artist and the institution, along with the community at large, benefit. It is not about bringing art into libraries, but *art making*, and all of the messiness and rigor and criticality and questioning that comes with it.” In an effort to bring us closer to the future he envisions, Thorp proposed a pilot program of ten new artist residencies at ten information institutions in the United States and Canada. The article concluded with an invitation for such institutions to contact him to become involved in such an initiative.

The project team engaged with Thorp’s call by inviting him to convene a web conference of artists, information professionals working in libraries, archives, and museums, and educators teaching LAM-related courses to imagine the content and delivery of AIR-focused curriculum. Three individuals drawn from each of the project team’s respective constituencies, along with three artists identified by Thorp, participated in a lively, interactive webinar in February, 2016. Prior to this scheduled exchange, participants were provided additional context based on an extensive study of AIR exemplars done by project research assistant, Derek Murphy (2015).

From both the review of Murphy’s case studies, and participant conversations, there emerged a number of working assumptions, which further served as informing concepts for the design of three curriculum models around artist residencies.

Working Assumptions Articulated During the February 2016 AIR Webinar:

- To get full benefit from these engagements, the work done must be artist-driven and as free from constraints as possible.
- Artists should be expected to collaborate with staff, and to immerse themselves in the communities and expertise of the host organization.
- Librarians (or archivists, or museum professionals) may be artists. Artists may be librarians (or archivists, or museum professionals).
- It is essential that the host institution and the artist clarify up front what the logistical expectations are for the residency. What is the purpose and nature of the program? What is its duration? What funding and resources are available to the artist? What are the host’s expectations for the artist? Is there a specific kind of end-product the host is expecting to see? What kind of work does the artist expect to pursue?
- Residencies are most successful when there is high compatibility between the artist’s interests and/or specific project proposal and the character of the institution. Sometimes

there is deep engagement with collections, sometimes with programming, and sometimes with the community.

- There is currently no standard best practice for how an institution can get connected with a suitable artist for a residency. In the case of the Madison Public Library's Bubbler, the staff member in charge of the program was very familiar with the local arts community and able to reach out to specific artists. The City of Portland Archives & Records Center, in contrast, put out an open call for artists. Other institutions find their artists internally, pulling from their staff or students.

Based on discussion in the web conference, three models for an artist-in-residence curriculum at an LIS Master's program were identified. Each model is designed at an introductory or basic level. All models reflect distinct student learning outcomes mentioned by a number of participants. The models could be used as a class project, could be developed as a stand-alone team project, or as an independent study.

Model 1 – Case-based model:

The student engages in an in-depth study of an artist-in-residence program at a cultural heritage institution (in progress or completed), including background research into similar residencies (literature reviews), gathering data from the institution, artists, participants, and focusing on aspects of planning (project management), identifying artists, defining the nature and focus of the program, funding, community outreach, publicity, program assessment/reflection, curating issues (intellectual property and reproduction rights, ownership, preservation/storage of property, etc.), and predictors of success/failure of a program. Student **learning outcomes** would include demonstrating an understanding of the needs, roles, and responsibilities of both the institution and the artist. (Model inspired by input from Sharon Irish, Jeff Ginger, Jer Thorp, Derek Murphy, and Amy Furness)

Model 2 – Partner/mentor model:

The student partners with an institution that is implementing, or is interested in implementing an artist-in-residence (or other arts-focused) program, assisting with all aspects as determined by a mentor, and reporting (assessing and reflecting) on the experience as part of the evaluation of the student's engagement. Student **learning outcomes** would include development of skills related to identifying and partnering with an artist, securing program funding, managing the residency, timelines, community outreach and engagement, etc. Overall, the student would learn best practices in planning, launching, managing, and maintaining a successful AIR program. The student would also be exposed to different types of AIR programs and their particular focuses, and implications thereof. (Model inspired by input from Heather Mathis, Matthew Brower, and Jeff Ginger)

Model 3 – Intermediary/linking model:

The student works across departments, reaching out to an arts program in their academic institution or another local institution, to identify projects where students enrolled in arts programs could assist with a particular campus library project. The student would serve as the intermediary linking the student-artist and the campus library, essentially facilitating a type of artist-in-residence partnership. Student **learning outcomes** would include requiring that the student demonstrate an understanding of various perspectives – the nature of the program, the specific requirements of the institution and/or the student-artist, what the student-artist and their

art brings to the table (critical arts/arts practice/culture of art perspectives), etc. (Model inspired by input from Derek Murphy and Jer Thorp)

In addition to one of these three introductory models, a secondary, advanced curriculum level could involve designing, launching, and managing an artist-in-residency, to be undertaken only after a student had completed the basic level curriculum and had secured a willing institutional partner (and artist?) to undertake the program. These residencies may also require that the student have prior academic and/or experiential background in the arts.

It is our hope that these models can provide inspiration to LIS educators who are considering incorporating the concept of the artist-in-residence program into their curriculum.

Design Thinking as Process and Mindset

As part of the commitment to disseminating both the activities and the innovative ideas emerging from the Forum, the project leads identified the 2016 annual Association for Library and Information Science Education (ALISE) conference as an opportunity for engaging with LIS educators on the theme of innovative pedagogy. A three hour pre-conference workshop format allowed for participants to be introduced to, and to apply concepts associated with, approaches to teaching and curriculum design not necessarily part of current LIS education best practice. At the suggestion of Dr. Debra Wallace, a curriculum designer, and Executive Director, Knowledge and Library Services, Baker Library, Harvard Business School, and with the assistance of Caitlin Bowler, also from the Harvard Business School, the project team considered Design Thinking, and, in particular, the models and applications developed by IDEO, as a framework for exploring innovative pedagogy. As *Design Thinking for Libraries* (IDEO, 2014) explains, “Design thinking is a creative approach or a series of steps that will help you design meaningful solutions ...” (p. 6). At the same time, “Adopting a designer’s mindset enables you to see problems as opportunities and gives you confidence to start creating transformative solutions” (p. 6).

Design Thinking as both approach and mindset provided the project team with the framework for challenging ALISE 2016 conference workshop participants with the question: “***How can we rethink the familiar more deliberately to generate innovative ideas for change?***” Within the innovative pedagogy context, the familiar is the educator’s LIS curriculum, with the challenge – and opportunity – being to rethink more deliberately and to generate innovative ideas to change the specific courses and broader curriculum in which he or she is engaged. The infographic in Figure 3 summarizes the topics, activities, and discussions in which attendees engaged.



Figure 3. Infographic of ALISE 2016 Workshop.

Working in small groups, ALISE 2016 conference workshop participants initiated their walk through the Design Thinking process by articulating a requisite “How might we ...?” question relating to curriculum. For example, “How might we structure on-site courses to better accommodate part-time students?” “How might we develop assignments that encourage a student’s experiential learning?” The deceptively simple “How might we ...?” question is the mandatory precursor to the Design Thinking process consisting of the following five steps (see also Figure 4):

1. Empathize: learn about the target group for whom we are designing
2. Define: construct a point of view based on user needs and insights
3. Ideate: brainstorm for creative ideas
4. Prototype: build one or more prototypes incorporating those ideas
5. Test: Share the prototype(s) with the target group for their feedback.

Applied to LIS education, the five-step design process, as taught at the Stanford d.school (see Figure 4) can effect transformative change, whether at the assignment, individual session, course, or program level.

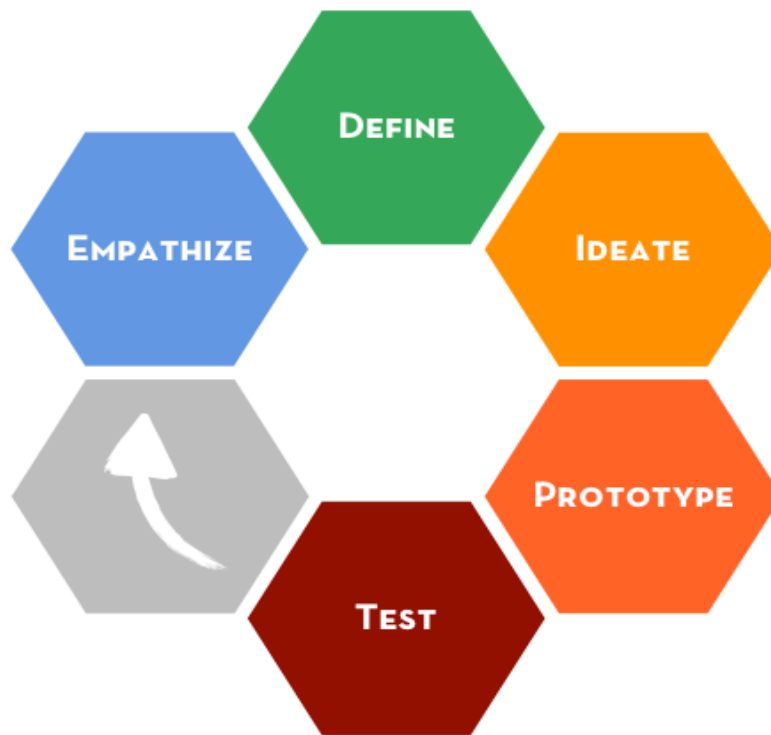


Figure 4. Design Thinking Process. Image © Stanford d.school. (Referenced by Silvers in <https://designthinkingformuseums.net/2016/05/03/managing-up-design-thinking/>)

In an exercise where they considered components and sequencing of a “typical” online course, discussing where students might encounter particular challenges, difficulties, or “pain points” based on various constraints (time, scheduling, other assignments, understanding of material, interest and engagement, etc.), participants experienced how breaking with fixedness – the familiar – could yield novel results. Having worked through the first three stages of the process, workshop attendees discovered how resequencing a course outline might offer a student a very different learning experience. The simple shift of the assignment for assessment from

- Overview
- Readings
- Lecture
- Discussion
- Posting Response
- *Assignment for Assessment*

to

- Overview
- Readings
- *Assignment for Assessment*
- Lecture

- Discussion
- Posting Response

alters the student's opportunity to apply in an assignment what he or she has learned based on course readings, and to experience subsequent course content (lecture and discussion) to reinforce, enhance, and further apply the learning from the literature. Some suggested that even this small tweak moves the actual learning away from rote-like towards experiential.

Participants were also introduced to and applied the concept poster, another tool supportive of the design thinking process which facilitates early prototyping. Outcomes from identifying stakeholders (empathize), and exploring their needs and challenges (pain points) (define), are recorded as part of the concept poster. Brainstorming possible solutions to the “how might we” question are then contextualized relative to their possible desirability, feasibility, and viability. The concept poster is useful to assessing which of the proposed solutions might best address stakeholders and their situation, prior to engaging in actual prototyping and subsequent testing and assessment. Figure 5 illustrates the utility of a concept poster to the process of designing innovative alternatives to current problems. The tool is readily deployed and can serve to facilitate creative rethinking towards transformative change.

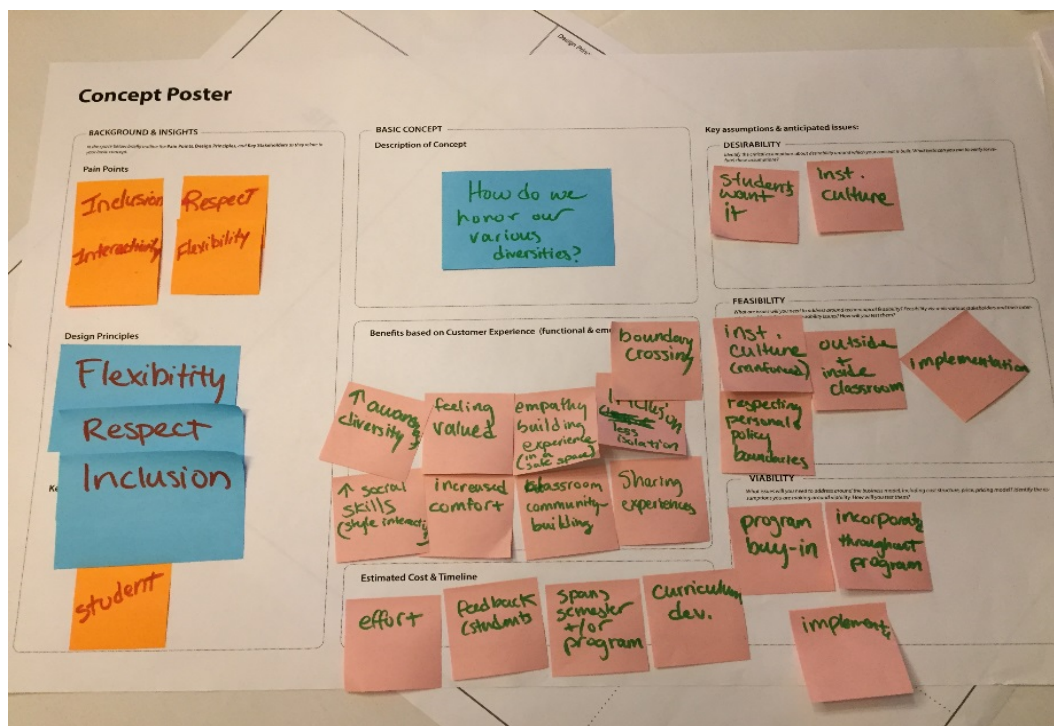


Figure 5. Concept Poster.

While numerous models and tools have been developed to support the design thinking process, the publication of *Design Thinking for Libraries*, which describes and includes concrete applications of IDEO concepts and tools provided us with a ready reference for introducing the potential of design thinking to LIS educators open to reimagining (their) curriculum. Since January 2016 when we offered the workshop, we have seen a steady growth in both interest in, and LIS education literature for design thinking. In June 2017, at the American Library

Association Annual Conference in Chicago, co-convenors Steven Bell (Temple University) and Rachel Clarke (Syracuse) assembled a panel for the session, *From MLS to MLD: It's Time to Integrate Design Thinking and Philosophy into LIS Education* (<https://www.eventscribe.com/2017/ALA-Annual/fsPopup.asp?Mode=presInfo&PresentationID=260672>). The session, which also included panelists from Chicago Public Library, a key partner in the IDEO *Design Thinking for Libraries* project, explored approaches and exemplars for supporting design thinking as a core component of LIS curriculum and the education of information professionals. The ALA program also relates to a recently awarded IMLS grant (RE-98-17-0032-17) to Syracuse University School of Information Studies and the University of Washington Information School to hold a National Forum on design thinking and methods in master's level library education (<https://www.imls.gov/sites/default/files/grants/re-98-17-0032-17/proposals/re-98-17-0032-17-full-proposal-documents.pdf>). While design thinking is a staple of many other disciplines, its potential as an innovative pedagogy is starting to be recognized within our own, with prominent examples emerging in the field. It will be incumbent on LIS educators to ensure that future information professionals have the opportunity to experience design thinking as a part of their own mindset, as well as a novel approach to addressing challenges in their own chosen field of practice.

Applying Design Thinking: Library Test Kitchen (LTK)

Immediately following the ALISE 2016 Conference, and keen to explore in greater depth design thinking as an innovative pedagogy, the project leads met with Jeffrey Schnapp, director of, and Jessica Yurkofsky, Creative Technologist at metaLAB at Harvard. Both described a four session course, “Biblioteca”, which involved design students and Harvard Library staff working together to research, observe, make, and test “ideas and things” that address workflow and other issues within library spaces. Subsequent iterations were developed by metaLAB designers under the name, Library Test Kitchen. With the suggestion that it would be instructive to pair design students with LIS students, the idea for a studio-based course that would be developed by metaLAB and offered at Simmons School of Library and Information Science was launched. In summer 2016, Simmons College piloted a Library Test Kitchen course (<http://www.simmons.edu/news/school-of-library-and-information-science/2016/august/library-test-kitchen-2016>), presenting students with opportunities to experiment with “human-centered design skills, ethnographic observation and interviews, rapid ideation, applied problem-solving, developing and pitching ideas, identifying assumptions, and design fictions.” Described as a course that seeks to address some big questions via a tightly focused, hands-on, practice-based point of entry, Library Test Kitchen challenges students to rethink the forms that 21st century libraries could or should assume.

As noted in the blog post describing the course, “The creative design thinking reinforced in this course, along with presentation and making skills, help students reframe the library as a place (in the broadest sense) for imagineering.” Candy Schwartz, SLIS Professor and co-instructor on LTK@Simmons (2016), observes in a video describing the pilot and student learning outcomes, that, whereas in other courses students are encouraged to think of new ideas and to think outside the box, “... here the difference was there was no box” (Reilly, 2017). The success of the pilot has ensured that the LTK@Simmons is offered again in summer 2017. A course syllabus is

available as an example for, or to be replicated at other LIS schools at <http://slis.simmons.edu/blogs/ourinformationfuture/library-test-kitchensimmons-syllabus/>.

Moving Forward

Near the end of the Forum, participants were invited to share ideas for what the White Paper could include, based on discussions over the previous two days. The summary graphic of that discussion begins with the admonition: Innovate & Collaborate with Courage (see Figure 6).

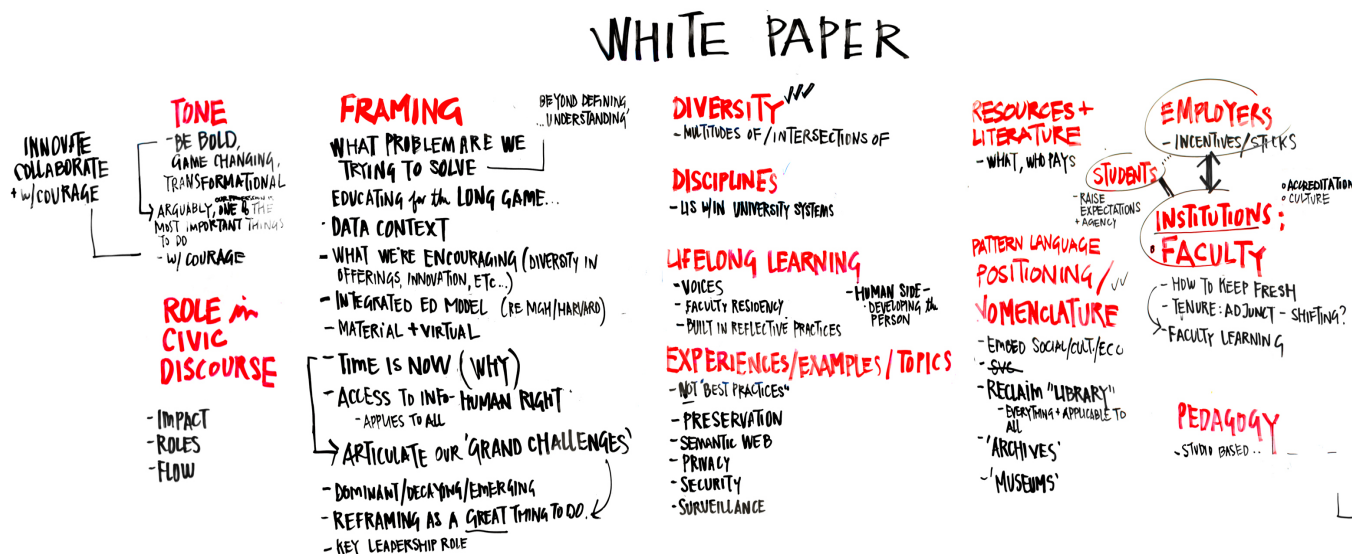


Figure 6. Infographic Representing Portion of White Paper Discussion.

John Bertot and colleagues (2015) similarly observe that, “The future rests with strong collaborative development of our curriculum—from courses to experiential learning” (p. 32).

The effort to re-vision LIS education comes at a time of increasing focus in the field on strategic thinking and design (e.g., the Association of Research Libraries’ (2016) strategic thinking and design initiative), innovation (e.g., the Knight Foundation’s (2017) effort to understand the state of innovation capability and culture of urban libraries), and transformation (e.g., the U.S. National Archives and Records Administration’s (2014) strategic plan).

One source of inspiration for curriculum design is that provided by Olin College of Engineering, an institution founded in 1997. Its curriculum is structured to “open doors to student possibilities” (Olin College, 2001) and is based on a “Triangle Model” encompassing: Superb Engineering; Arts (creativity, innovation, design, communications); Entrepreneurship. The goal is to equip students for careers of leadership and positive contributions to society. According to its mission statement (<http://www.olin.edu/about/at-a-glance/vision-mission>), “Olin is dedicated to continual discovery and development of

effective learning approaches and environments, and to co-developing educational transformation with collaborators around the globe.”

Of course LIS education is embedded in existing higher education institutions, departments or schools within those institutions, and often with limited capacity to add new faculty and staff. Nevertheless the discussions initiated at the Forum on Envisioning Our Information Future and How to Educate for It generated ideas for proofs of concepts that enabled exploration of some approaches to answering the questions:

- What will we teach?
- Who will we teach?
- Who will teach?
- How will we teach?

Echoing John Meier and Rebecca Miller’s (2016) case for design thinking and rapid prototyping in libraries, we encourage all LIS educators to get started exploring new possibilities whether at the level of an assignment, an individual class session, a course, or the curriculum as a whole and share what they learn with colleagues. As facilitator Gail Taylor observed at the conclusion of the Forum (2015): “Throughout the three days we were together I was constantly reminded of how much this group cares about their work. This was the first time all of the various aspects of information services had come together to design together. They were hungry to share and learn from each other. They seemed to realize the importance of working together to curate the past, present, and future of information.”

Understanding what we will teach, who we will teach, and how we will teach a re-visioned curriculum will miss the mark without a frank and open consideration of *who* will teach. Any innovation requires a period of transition, from what has been usual practice to what will become new best practice. For some educators this will entail a rethinking of both content and delivery, along with the recognition that, while many components of his or her scholarly repertoire will be readily adaptable to revision, there may also be the need for pedagogical retooling, learning new approaches, and incorporating material that has been fundamentally rethought or is net new. While Forum participant, Nicholas Negroponte (MIT Media Lab), advocated that, “the best curriculum is no curriculum at all” – a position representing one end of a continuum, and supported by many – LIS educators more accustomed to designing courses within the framework of the American Library Association Standards for Accreditation, might find such an approach disquieting, or at least unfamiliar. Some might argue that we are constrained by standards that determine what we are required to teach in educating future information professionals; however, as the Introduction to the February 2, 2015, revision to the *Standards for Accreditation of Master’s Programs in Library and Information Studies* document reminds us, “The Standards stress innovation, and encourage programs to take an active role in and concern for future developments and growth in the field” and are “indicative, not prescriptive” (p. 5).

For the time being, we, as LIS educators, may find ourselves straddling both the familiar status quo and the emerging new realities of innovation and transformative change. We have been here many times before; time does not stand still, new ideas must flourish, and innovations of today will soon enough become the familiar that we are once more compelled to replace by what comes next. While this may seem, at times, an unfamiliar landscape, it is not an unknown place

in which we find ourselves, and we are not alone. We can embrace thinking outside the box, or relish the concept of no box at all. We cannot simply stand still passively awaiting how LIS education will evolve. With Forum facilitator, Gail Taylor, encouraging us to engage in a future by design, not by default, and with Forum participants exhorting us to innovate and collaborate with courage, we can be inspired to lead the change and to affirm our roles as those who *will* teach a re-visioned LIS curriculum in the near term and beyond. The future is diminished without a past, though the past cannot predetermine the future with all of its possibilities and opportunities. Our LIS graduates expect us to anticipate, to be informed about what's coming next, and to help them chart their career path with a clear and confident vision. As architects of a learning journey, we owe our future information professionals nothing less.

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