

# The Global Transformation of Libraries, LIS Education, and LIS Professionals

Sandra Hirsh (Professor and Director, SJSU School of Information)

I am honored to speak with you today!

I love the library field – maybe that is because my mom was a librarian. As a second generation librarian, I have grown up in the library field. I have seen first hand how exciting, transformative, and unpredictable the field of library and information science is. When I got my degree in library and information science in 1990, I could not have predicted all of the changes and opportunities that we continue to see today.



One of the things that I appreciate about my library degree is that I have been able to use it to unlock a wide range of wonderful career opportunities. I have been able to apply the skills I learned in library school to working in a variety of environments – even those outside of libraries. I spent nearly 7 years working in research and development at HP Labs, helping scientists and engineers improve the way that they applied information into their research processes. I spent nearly 6 years working in consumer product development in the Silicon Valley at Microsoft and LinkedIn, applying my knowledge about user needs and behavior, and how to organize and structure information based on that understanding to create great user experiences for products like hotmail, MSN.com, Windows Live mobile, and other products.

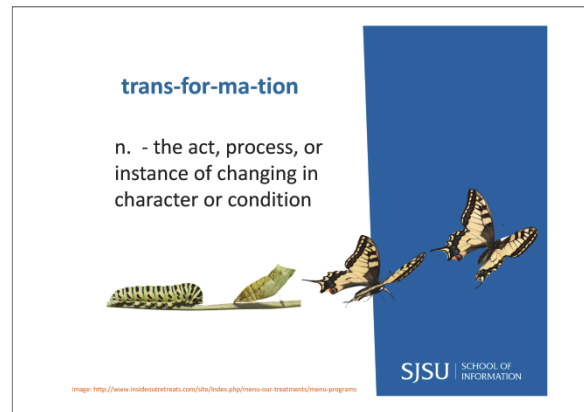
My position over the last 7 years as the director of the exclusively online San José State University School of Information has also given me the opportunity to reflect on how the information profession is changing and how library and information science education is changing as well. I look forward to sharing some of my thoughts with you today.

In this presentation, I will address some of the disruptive and emerging technology trends and what these mean for libraries, librarians, and library and information science education.

Throughout history, libraries have had to continuously evolve when faced with transformational change. For example, libraries have evolved to accommodate the transformation of:



- book formats moving from scrolls to the codex to Kindle eBooks,
- access systems moving from card catalogs to online catalogs,
- collections moving from physical repositories to electronic databases, and
- reference services moving from in-person mediated experiences to virtual reference services and independent use of reference tools.

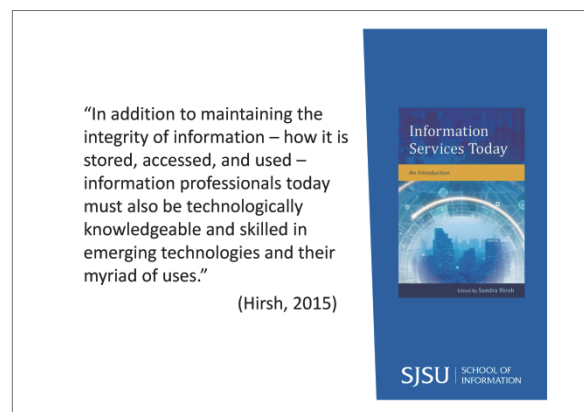


Over the first two decades of the 21st Century, we have witnessed these and other epic transformations within the information landscape. While libraries have already undergone lots of change and transformation, we are not yet done with transformations in the library field.

Some of the questions we will be addressing today include:

- In what ways have libraries adhered to more traditional models of information services?
- How have global trends dramatically redefined the work librarians perform every day?
- And, how will librarians transform themselves to adapt to the new demands and changes in the future?

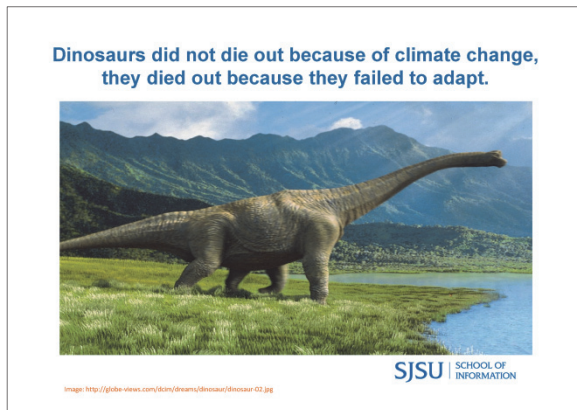
In my first book *Information Services Today: An Introduction*, I focused on how “technology has exponentially changed both the role of information organizations [libraries] and the professionals who work in them” (Hirsh, 2015). I further emphasize how, “in addition to maintaining the integrity of information – how it is stored, accessed, and used – information professionals today must also be technologically knowledgeable and skilled in emerging technologies and their myriad of uses” (Hirsh, 2015, p. 5).



With the continuous emergence of technology, what it means to learn, create, and do better is constantly changing. Our libraries, and the professionals that work in them, must also constantly transform. We must always be looking ahead at the technologies that are upcoming and how they will impact our communities.

In fact, the experience of dinosaurs presents libraries with an important cautionary tale. As an intelligent person once said: Dinosaurs did not die out because of

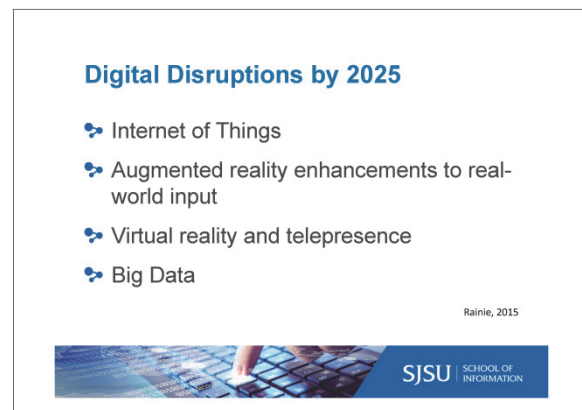
climate change, they died out because they failed to adapt (Abram, 2015).



So what are some of the changes that we need to be aware of so we don't end up like the dinosaurs? We all have seen the dramatic growth of information within the last decade – particularly the growth in usage and reliance on the internet, mobile devices, and wireless. But I would like to focus on some of the ways that these digital developments are disrupting the way that we interact with information. I will then talk about specific emerging technology trends that are impacting libraries.

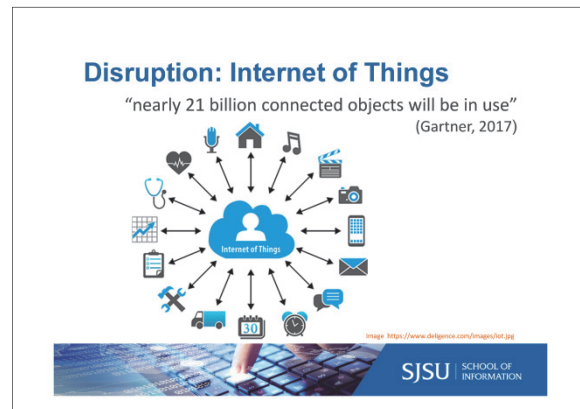
Lee Rainie, Director of Internet, Science and Technology Research at the Pew Research Center, recently presented on “The Next Digital Disruptions” (Rainie, 2015). He identified new trends that will have dramatic impacts on the information landscape by 2025. He identified that there will be growth in:

1. The Internet of Things. We will talk a bit more about this in a minute.
2. The use of portable/wearable/implantable devices (like Google Glasses) to augment and enhance real-world input.
3. Virtual reality and telepresence. We will also talk more about this in a minute.
4. The use of big data to analyze and understand the world around us – such as by looking at information visualizations to analyze and map societal and business data.

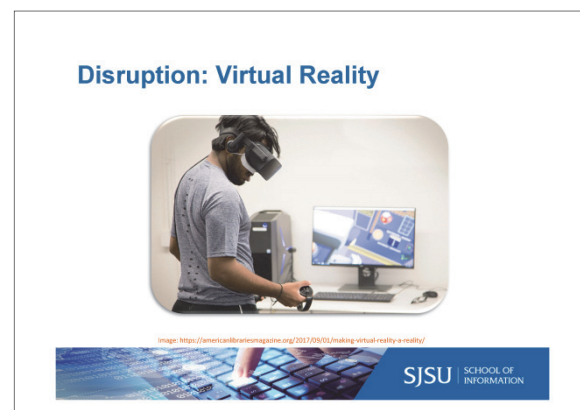


Let's look a bit closer at a couple of the digital disruptions that Rainie identified. The Internet of Things is the concept of a future where everyday physical objects will be connected to the Internet and will be able to identify themselves to other devices. Gartner predicts that by 2020, nearly 21 billion connected objects will be in use (cited in The Internet of Things, 2017).

RFID (radio frequency identification) technology, which libraries have used to keep track of their collections and speed up operations, is one way that libraries have been involved in the Internet of Things. There are other applications in libraries as well. For example, the University of Munich has a library app that uses a beacon network to provide supplementary information about art works and other points of interest via people's cell phones when they get near the art works. And other libraries are using Internet of Things to track visitor traffic to better design libraries and services (Horizon Report, 2017).



Looking at another of Rainie's predicted digital disruptions, virtual reality has already become more prevalent. While to date virtual reality has been used primarily in military training exercises, libraries are now starting to do much more with virtual reality. For example, North Carolina State University (NCSU) in Raleigh North Carolina has started to lend out virtual reality equipment and offers a VR Usability Lab and Studio. And just in June 2017, the Library Virtual Reality (VR) Experience Project was launched in California; Oculus Rift, the company that pioneered Virtual Reality (VR), launched a pilot program that provides 100 Virtual Reality kits to libraries in California. So libraries are starting to explore what their role will be with this disruptive technology.



But what do we mean when we talk about emerging technologies and issues for libraries? The Horizon Report (2017) annually evaluates and reports on the next emerging technologies that will be implemented by libraries and higher education in the near future. I regularly have contributed as an expert panel member for this report.

In 2017, the Horizon Report identified key emerging trends for libraries, 7 of which we will discuss today. These trends we will be talking about include: collaborative learning experiences, evolving nature of the scholarly record, patrons as creators, rethinking library spaces, research data management, online identity, and valuing the user experience. I will now discuss each of these trends briefly.

## 7 Key Trends

1. Collaborative learning experiences
2. Evolving nature of the scholarly record
3. Patrons as creators
4. Rethinking library spaces
5. Research data management
6. Online identity
7. User experience



Libraries are clearly no longer a place to be seen and not heard. Collaborative learning environments and experiences are happening in libraries across the globe. David Lankes (2016), author of The Atlas of New Librarianship, notes “A library should be a participatory platform that allows a community to share passions, expertise and resources” (p. 113). He further acknowledges that “knowledge is created through conversations” (p. 23).

## Trend 1: Collaborative Learning Experiences

- Open up library spaces for collaboration
- Students form study groups and work with each other
- Librarians provide courses in the collaborative spaces to invite additional participation
- Cross-organizational collaboration is becoming more common



Collaborative learning experiences open up library spaces and inspire collaboration. This is happening in both academic and public libraries. For example, the University of Chicago has opened up one floor of Regenstein Library as a collaborative learning environment with a central work area surrounded by collaboration rooms.

Public libraries are also creating collaborative learning opportunities. At Chattanooga Public Library, the library offers many of its computer workshops as collaborative “co-learning classes” where participants are encouraged to help out one another without expecting the librarian to be “the expert”. In this environment, collaborative learning occurs by having everyone log onto a shared platform and each participant working at their own pace. The result is the creation of a social and learning environment in the library.

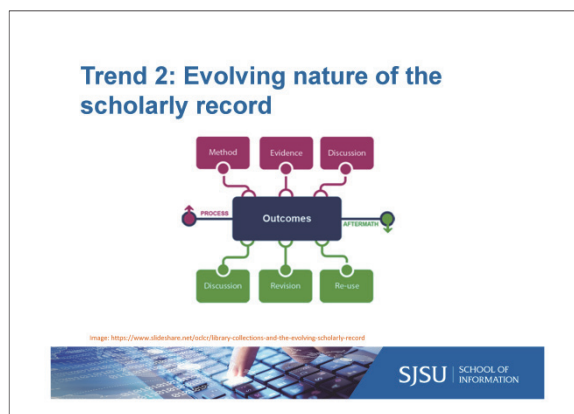
## Chattanooga Public Library collaborative learning

- Students are encouraged to help out one another without expecting the librarian to be “the expert”
- Everyone logs onto a shared platform
- Each student works at their own pace

**Result:** Creates a social and learning environment within the library.



The second trend noted in the Horizon Report is the evolving nature of the scholarly record. The scholarly record has changed dramatically in recent years – shifting from being largely print-based and publisher-controlled to being increasingly offered on online platforms and through open access publications. Lorcan Dempsey and Brian Lavoie (2015) from OCLC explain that the scholarly record is now even more complex today due to the volume and diversity of content that is being created. Additionally, the custodial responsibility of the scholarly record has shifted from the academic library being the primary holder to the scholarly record becoming more scattered over the network. These changes have big implications for libraries.



In particular, libraries are playing increasing roles in helping researchers manage the scholarly record through digital scholarship initiatives. Academic libraries are helping researchers in scholarly communication work by curating, preserving and publishing digital materials and providing digital authoring support.

Libraries are also using new ways to evaluate the scholarly record now that it has moved to the web. Altmetrics is an alternative to traditional scholarly evaluation filters like peer review, citation counting, and average citations per article. Some libraries are using altmetrics to evaluate collection decisions, while others are using the metrics to help faculty, researchers and other scholars evaluate their own output. And, still other libraries are helping users to manage their online and social media presence using altmetrics to understand the impact.

In addition to digital scholarship and altmetrics, another way that libraries are engaged with the evolving scholarly record is through open access.

Open access is rapidly developing as a publishing mode that reduces the escalating costs of traditional platforms. Open access has become a “global phenomenon in libraries” (Tait, 2016). In 2016, there were almost 9500 open access journals (Morrison, 2016).

The *Directory of Open Access Journals* (DOAJ) is a great resource for librarians to retrieve open access journals. “DOAJ is a community-curated online directory that indexes and provides access to high quality, open access, peer-reviewed journals” (<https://doag.org>).

Through this discussion, you can see how complex the evolving scholarly



record is and how important it is for libraries to pay attention to these trends and prepare to evolve their services to meet these changing needs.

The third trend reported by the Horizon Report is the role of libraries in helping patrons create content. While in the past libraries were places for patrons to read and access published information, libraries are now taking a more active role in the creation of new knowledge. Libraries are natural places to connect “learning, creativity and knowledge production” (New Programs for the Future of Public Libraries, 2017).

### Trend 3: Patrons as Creators



**Examples of Patrons Creating in the Library:**

- ▶ Coding hack-a-thons
- ▶ Innovation labs
- ▶ Makerspaces
- ▶ Robotics

Teen hackathon event at Cupertino Library  
Image: <http://cupertinolibraryfoundation.org/cupertino-teen-hackathon-a-huge-success/>



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For example, patrons are participating in coding hack-a-thons where they are learning usable skills while they are creating new software products. The photo on this slide shows a teen hackathon event at the Cupertino Public Library in California.

SHOW Picture 1

### Teen hackathon event at Cupertino Library

Image: <http://cupertinolibraryfoundation.org/cupertino-teen-hackathon-a-huge-success/>



### Innovation Labs and Makerspaces



**San Jose Public Library Maker[Space]Ship**  
<https://www.sjpl.org/makerspace/>



**Chicago Public Library Innovation Lab**  
Image: <https://cpflfoundation.org/maker-lab-expires-curiosity-in-3d/>



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Another example is how entrepreneurs and other users are utilizing innovation labs in libraries. Chicago Public Library (as shown on this slide) created their innovation lab in 2012, and the lab has continued to evolve since then. It does much more than provide access to 3-D printers. Tools and classes focus on teaching digital design and fabrication skills, and on creating prototypes for

business projects. All of this is free and available to everyone.

Makerspaces aren't new but how libraries are using and sharing their spaces is constantly changing. Libraries are also now going out into the community to engage in content creation with patrons. The San José Public Library recently launched The Maker[Space]Ship (see the photo on this slide) which is an innovative mobile workshop. The goal is to overcome access barriers in San José and to foster creative ideas, connect people with technology, and encourage problem-solving, collaboration, and discovery. One of our School's alumni helped lead the effort to launch this exciting project.

SHOW Picture 2



**Chicago Public Library Innovation Lab**

Image: <https://cplfoundation.org/maker-lab-inspires-curiosity-in-3d/>



**San José Public Library Maker[Space]Ship**

<https://www.sjpl.org/makerspaceship>

<https://youtu.be/b0XNSP8oW5s>



Another key trend is how we think about library space. Today's library spaces must accommodate both independent study and reading while also including space for group and community activity. More and more libraries are transcending themselves beyond bookshelves and study spaces. A great example of a library which has fully embraced a new way of thinking about library space is Dokk1, which is a large new Library and Citizens' Services building in Aarhus, Denmark. This library engaged in a design thinking process that pulled together various stakeholders to reimagine what types of activities would take place in the library and what partner organizations and services would be housed in this new building, including citizen services.



Another important trend for libraries is research data management. Research Data Management helps researchers navigate the increasingly complex landscape of data planning, storage, and sharing. Today's data needs to be selected, curated, retained and stored, using appropriate metadata – and research data management provides the strategies and processes to do that. Librarians are playing important roles to help researchers throughout the research lifecycle, particularly in helping to provide access, support, and data management.



The University of Michigan Library has developed Deep Blue Data, a repository for sharing and archiving mostly open and nonproprietary research data that were developed at the University of Michigan. This helps researchers share their research data and ensures compliance with grant requirements to share and archive data sets.

Everything today has an identity that attaches to a person or entity. This can include anything and everything a person does – their name and contact information, online and social profiles, research outputs, interactions and purchases. Everything has a digital

**Trend 6: Identity Management**

- Online, everything has an identity that attaches to a person or entity.
- This can include one's name and address, online profiles, research outputs, consumer interactions and any digital footprint.
- Librarians are in the unique position to guide the crafting, managing and protecting of online identities.

imprint. With the increase of access points and the amount of interactivity users now engage in online, identity management has become a critical trend for the information landscape – not only in understanding the volume of information that can be collected, but also how to assist patrons in understanding and protecting their online identities. This is noted as a key trend for libraries and librarians because they are in the unique position to guide the crafting, managing, and protecting of online identities.

Privacy and cybersecurity issues have been concerns for several years, but their potential impact on libraries and users is still emerging and critical. Cherie Givens (2015), a noted privacy and cybersecurity attorney, stated that “Growing privacy concerns signal a need for changes in privacy and security policies, and laws. They also offer the opportunity for information professionals to help shape the direction of future practices regarding information privacy and security” (p. 345).

**Identity Management**

If your library was hacked and all your computers were held for ransom, what would you do? In St. Louis, Missouri, recently, that is just what happened to the public library system. The 700 computers in all branches were effectively closed for book loans and internet access unless the library agreed to pay \$35,000 in Bitcoin. The library refused and decided to wipe hard drives.

<https://americanlibrarianmagazine.org/blog/the-scopsq/cybersecurity-privacy-2017/>

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Specific roles that information professionals need to address in regard to privacy and cybersecurity include (but are not limited to):

- Implementing physical and virtual security measures throughout the organization’s full spectrum of services offered,
- Assessing and preserving the confidentiality, integrity, and availability of data, and
- Identifying where information and communication systems may become threatened and taking measures to protect and defend that information.

The public library system in St. Louis, Missouri was recently hacked and had to respond to having all their library records becoming inaccessible. The hackers wanted a \$35,000 ransom. The library didn’t pay and instead had to wipe all their hard drives. Developing privacy and cybersecurity practices and sharing those processes with users are essential to data security and safety.

San José Public Library in California provides a Virtual Privacy Lab where patrons can access privacy topics and generate a custom privacy toolkit geared towards their online needs. Toolkits include links, tips, and resources that empower them to cus-

Virtual Privacy Lab

Learn about privacy topics and generate a custom privacy toolkit geared towards your online needs. Toolkits include links, tips, and resources that empower you to customize your online identity. Email or print your privacy toolkit for future use.

Overview: What is Online Privacy?

Data Sharing & Data Mining

Security: How the Internet Works

State of Online Privacy

Social Media & Online Sharing

Your Information Footprint

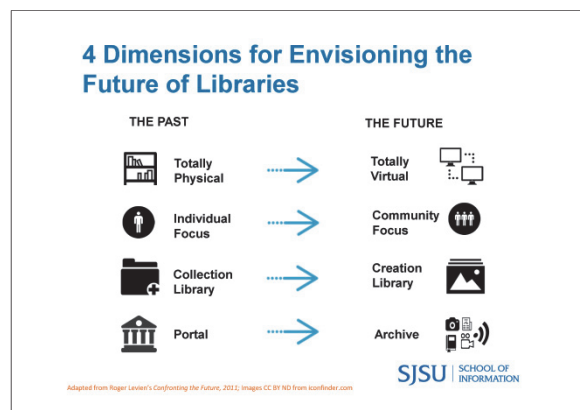
Anonymity & Tracking

<https://www.sjpl.org/privacy>

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tomize their online identity. Patrons can email or print their privacy toolkit for future use.

Another trend in the information landscape is the focus on creating great user experiences in the library. In Chapter 17: User Experience of *Information Services Today: An Introduction*, Aaron Schmidt (2015), a user experience expert, defines user experience design as “an unparalleled framework for thinking about and improving any type of information organization [library], of any size”. He emphasizes that “if information organizations [libraries] are to remain relevant, trusted institutions, they must be usable and desirable” (p.175). Focusing on the user experience of library users means improving their experience in the library such as through signage, staff interactions, programming, services, and content.



So, what are the implications for libraries emerging out of these trends? How do libraries respond to the emerging landscape to best serve their communities?

In his report *Confronting the Future*, Roger Levien addressed the major issues facing libraries in the future and provided a framework of four dimensions for envisioning the future of LIS services (2011).

- In the first dimension – Physical to Virtual – the library is purely physical on one spectrum but completely virtual on the other spectrum.
- The second dimension – Individual Focus to Community Focus – outlines the transformation in focusing on the specific needs of the information user (such as quiet study space, privacy, comfort, etc.) on one spectrum to a broader focus of serving a community and becoming a hub for community interaction and group work on the other spectrum.

- The third dimension highlights a trend where the library is a collection library on one spectrum and a creation library on the other spectrum.
- The fourth dimension proposed is that of Portal to Archive and takes into consideration the ownership of the collection. In the Portal role, the library is a mediator between information users and resources. In the Archive role, it's the library's role to assemble and disseminate information to the community served.

Most modern organizations today lie somewhere between each of these dimensions, still offering some forms of both spectrums. This framework is useful, though, in identifying both the connection of libraries of the past to those of the future.

In order to position libraries well for the future, here are a few of the ways that libraries need to continue to evolve to be relevant to their communities.

The IFLA Trends report highlighted that “An ever-expanding digital universe will bring a higher value to information literacy skills like basic reading and competency with digital tools. People who lack these skills will face barriers to inclusion in a growing range of areas” (IFLA, 2013). Libraries need to serve as literacy information centers.

**Be the one-stop resource for information/technology/literacy instruction**

*"An ever-expanding digital universe will bring a higher value to information literacy skills like basic reading and competence with digital tools. People who lack these skills will face barriers to inclusion in a growing range of areas."*

IFLA Trends Report

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<http://www.sjsu.edu/computer/>

**Examples of Information/literacy/Technology Literacy in Libraries**

- Offer courses on how to conduct basic searches on the Internet.
- Conduct a lesson on how to search the library catalog system for resources by keywords.
- Demonstrate to a group of high school students how to find a book using the call numbers.

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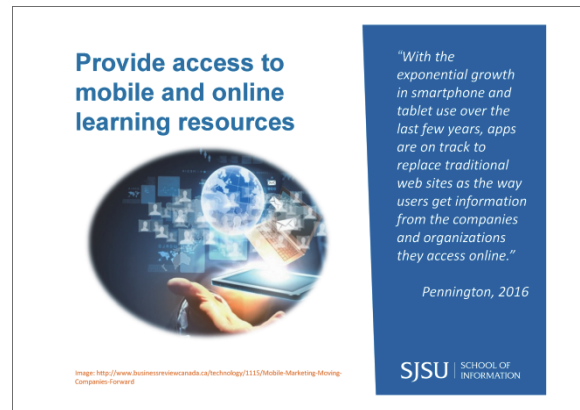
For example, libraries can provide information, technology, and literacy instruction by:

- Offering courses on how to conduct basic searches on the Internet,
- Conducting a lesson on how to search the library catalog system for resources by keywords, and
- Demonstrating to a group of high school students how to find a book using the call numbers.

Even the smallest lesson will move users towards a greater understanding of how information is processed and retrieved.

It is no longer enough to make just resources available via the library's website. Users want to access the information “anytime/anywhere” and expect

access to mobile and online learning resources. Dr. Pennington (2016), professor at University of Strathclyde, recently stated that “With the exponential growth in smartphone and tablet use over the last few years, apps are on track to replace traditional web sites as the way users get information from the companies and organizations they access online.”



We should always remember that our libraries are places of learning and exploration. Whoever comes through our doors is there to seek knowledge or explore a new topic. We, as information professionals, are obligated to do everything in our powers to provide every user with an environment conducive to that end. The user should have access to the technology necessary for their exploration. This could include computers, e-readers, gaming stations, music recording stations, 3-D printers, and other new or emerging technologies.



One great example of how libraries are providing environments for exploration for learning new technologies is at the Santa Clara City Library in California. One of my school’s alumni develops programming, such as Drone Movie Making where youth get to fly drones with cameras and then edit the footage to make a movie. Visitors get to experience technology, build STEM (STEM = science, technology, engineering and math) skills, and try something new like playing with drones.



SHOW YouTube 1  
VIDEO: <https://youtu.be/DhiVdcPJe7Q>

Another example is the Make-HER Program at the Sunnyvale Public Library in California. One of our School’s alumni started this innovative program to give

girls ages 8 – 12 and their moms the opportunity to work side-by-side, applying their creativity both to the use of existing tools and the invention of new ones. Girls and their mothers carry out project-based, hands-on STEM learning in a series of two-hour workshops. These two examples are really exciting and showcase innovative ways that libraries are engaging with their communities.

**Make-HER Program:  
Sunnyvale Public Library**



Video: <https://youtube.com/watch?v=Au546-jiunA>



SHOW youtube 2  
VIDEO: <https://youtu.be/Au546-jiunA>

To be of essential value, a tool, resource, or service must be easily accessible to the user. Regardless if it is a physical tool in a makerspace or a digital tool on the desktop of a computer, a user must be able to quickly and easily locate the tool so they can stay on task with their research or project so they do not become frustrated or discouraged.

**Make library tools available at the point of need for users.**



Image: <https://twitter.com/fieldtools/status/52183598331175808>



As many of us know, social media is a virtual constant in our modern society. Social media platforms such as Facebook, Twitter and SnapChat have become popular ways for many of us to “keep in touch”. Harnessing such powerful, informal media outlets to communicate with a broader audience enhances the odds of generating a higher accessibility profile.

**Develop initiatives that blend information literacy with social media**

Before you **THINK**

- T** = Is It True?
- H** = Is It Helpful?
- I** = Is It Inspiring?
- N** = Is It Necessary?
- K** = Is It Kind?

Image: <https://media.ocka.de/pinterest.com/718u/Lu79/b/Lu06c27a25f78b/ku5d9f6c38f.jpg>



Information users must be able to comprehend the information he or she has engaged with; therefore, it is imperative that they be allowed to digest the information on their own, at their

**Enable users to interface with information in a natural and personalized manner.**



Image: <http://www.onlinereformcentre.ca/>



own pace, in their own way. It is our duty as the information professional to ensure that the user is able to comfortably interface with that piece of information.

So what does all this mean for the library and information professional? How is technology and its integration in the global information environment and our libraries changing the roles of librarians?



An effective way to assess the professional needs of libraries is to analyze current job postings. Collectively, these job postings paint a great picture of the competencies, skills, and knowledge libraries are seeking in order to fulfill the needs of their communities. Given the trends in emerging technologies that we have discussed today, it is not surprising that the results from the *2017 MLIS Skills at Work: A Snapshot of Job Postings* report suggest the following essential skills for information professionals as shown on this slide (2017).



San Jose State University, "MLIS Skills at Work: A Snapshot of Job Postings Spring 2017", 2017. [http://libref.sjsu.edu/mlis/infocoll/commst/pdffiles/mlis\\_skills.pdf](http://libref.sjsu.edu/mlis/infocoll/commst/pdffiles/mlis_skills.pdf)

- Communication and interpersonal skills
- Integrated library systems
- Collaboration and teamwork
- Independence, time management and multi-tasking
- Basic computer and Internet skills
- Best practices (trends based) in library service and management
- Reference and research
- Customer (information user) service
- Diversity sensitivity
- Analysis, critical thinking, and problem solving

Note in particular the importance placed by employers today on understanding technology (particularly integrated library systems and the internet) and providing strong service to all types of library users, as well as having good soft skills like being able to work independently, having strong communication skills, being a good collaborator, and having good problem solving skills.

One great example of how important it is for library professionals to keep up with new technology trends is the growing experimentation with robots in the

library. We are seeing that artificial intelligence and robots will not only be “behind the scenes” powering our collection development and websites, but they are making their way visibly into the library.

In May 2015, Bibli was introduced at Denver ComiCon and is now “working” at the Longmont Public Library in Colorado. The robot was created by and for kids with autism. The report indicated that kids with autism often relate better with robot than humans.

In August 2017, the Palo Alto Public Library in California also experimented with robots in the library. Using Beam and other robot technology, the Palo Alto Public Library has greeter robots who are interacting with library patrons in new ways. The robots provide many library services from story time to helping patrons locate the best seller they are looking for.

Keeping up with technology trends and staying up to date with technology is an expected core competency for librarians today.

In addition to the analysis of the top skills required by employers today that we just discussed, the University of Maryland published a recent report identifying competencies that will be required of information professionals over the next 20 years (Bertot, Sarin & Percell, 2015).

- Ability to lead, manage, and assess projects and people
- Ability to facilitate learning
- Marketing and advocacy skills
- Communication/people skills
- Critical thinking
- Fundraising, policymaking, and budgeting skills
- Collaboration and relationship building (w/staff, patrons, community partners)
- Leadership
- Knowledge of crisis management techniques

It is interesting that the competencies they identified as important for the future range from soft skills like collaboration and relationship building to other kinds of skills like fundraising, project management, crisis management, and advocacy. Clearly librarians will need to be leaders and be adept at managing a complete and diverse set of activities for their libraries.

**Robots in the Library**

- Bibli was introduced at Denver ComiCon and is now “working” at the Longmont Public Library (2015).
- Greeter robots are used in the Palo Alto Public Library using Beam technology (2017).

Image: <https://longmontcolorado.gov/departments/departments-e-ml/library/just-for-children/bibli-the-library-robot>

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**Essential Skills, Tools, and Competencies - Over the Next 20 years**

- Ability to lead, manage, and assess projects and people
- Ability to facilitate learning
- Marketing and advocacy skills
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- Critical thinking
- Fundraising, policymaking, and budgeting skills
- Collaboration & relationship building (w/ staff, patrons, community partners)
- Leadership
- Knowledge of crisis management techniques

Schwartz, 2016 (Library Journal)  
Bertot, Sarin, & Percell, 2015 (University of Maryland)

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It is clear that the role of librarians has changed dramatically from the stereotype of just being a caretaker of books, and our role is continuing to evolve. The Library Journal 2016 Placements and Salaries report highlighted the top 5 job titles for information professionals (Allard, 2016). These job titles focus mostly on technology and include:

- Information technology
- Data curation and management
- Teacher librarian
- Data analytics
- User experience

These are not the traditional job titles that librarians have typically held in the past -- such as cataloguer, reference librarian, etc.

**Top Job Titles**

Top Five Job Titles

- Information technology
- Data curation and management
- Teacher librarian
- Data analytics
- User Experience

Source: <http://li.libraryjournal.com/2016/10/placements-and-salaries/2016-careers/charting-the-future/>

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The same report also highlighted NEW job titles for information professionals – reflecting the dynamic changes and needs for information service. These include interesting job opportunities such as Immigrant Services Librarian, Innovation Catalyst Librarian, and Director of Knowledge Curation and Innovation. These job titles show the exciting ways that librarians are now applying their fundamental skills and knowledge in new ways.

**New Job Titles for Librarians**

- Immigrant Services Librarian
- Innovation Catalyst Librarian
- Concierge
- Wikipedian in Residence for Gender Equity
- Director of Knowledge Curation and Innovation

Source: <http://li.libraryjournal.com/2016/03/careers/new-brand-new-jobs-for-todays-librarians-careers-2016/>

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The influence of technology on our libraries and the need for skilled librarians are stronger today than ever. Libraries need employees who are competent both in the foundational and technological applications of the library. Libraries also need these employees who are committed to transforming themselves, and their roles, as well as the library throughout their careers.

Library and information science (LIS) education is the key ingredient for providing and sustaining library professionals who are qualified to meet the demands of libraries today and who are prepared for the community-driven technological transformation of the future. Specifically, LIS education needs to:

- stay abreast of emerging tech-

**LIS Education:  
Providing the Path for  
Vibrant Library Futures**

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nologies so that instructors are providing meaningful educational experiences to their students;

- take the lead on researching how these technologies will impact our communities and the way we learn, create, and develop; and
- offer continuous professional development opportunities so that LIS professionals, and libraries, remain a vibrant – and essential – community resource.

As I will demonstrate in the upcoming slides, LIS education has a strong ear to the industry. We are watching hiring trends to identify the current needs of libraries. We are watching the industry reports of emerging technologies and how they will impact education, our communities, and our libraries. And we hire faculty who are experts in library applications, user behaviors, and emerging technologies so we can build curriculum and professional development opportunities that meet the immediate and future needs of libraries.

As the director of the School of Information at SJSU, I keep with changes in LIS education. These are my observations about a few of the LIS education trends in the US that I find interesting.

- **From LIS schools to iSchools:** The majority of library schools in the US have removed the word “library” from their school’s names – taking on instead names like School of Information Studies, Information School, School of Information. Schools have moved in this direction because graduates are now working not only in libraries but in a variety of professions that need people with deep information skills in other non-library environments. Some of these new iSchools are merging with computer science departments and are minimizing or eliminating the “library” focused part of their programs.
- **Broadening the scope of the curriculum:** We are seeing the importance of focusing on a broad curriculum that includes a focus on a strong foundation in information principles, and also an expanded focus in areas such as data analytics, marketing, strategic planning, etc. that enable people to work both in the library and in other information environments. In particular, there is a strong emphasis on developing skills to work with digital content, which is desirable for employers.
- **Expansion of online education in the United States:** More than 50% of the accredited LIS master’s degree programs in the US and Canada have 100% online versions of their degrees. Every LIS program - if it wants to survive - has to offer at least some online classes. Many of these online

**LIS Education Trends**

- From LIS schools to iSchools
- Broadening the scope of the curriculum
- Expansion of online education
- Strong emphasis on skills based learning and practical management skills

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programs, like our own online program, are accredited by the American Library Association just like the on site programs so there is no difference in terms of quality or acceptance of the online degrees. Graduates from online programs are faring equally well in getting jobs when compared to graduates from on site programs.

- **Strong emphasis on skills based learning and practical management skills:** I am seeing a trend in the employment market that is focusing on skills and practical experiences and not necessarily the degree. People can develop practical skills quickly outside of degree programs, such as through bootcamps and MOOCs. We are also seeing the growth of training at the undergraduate level in LIS, even though historically the terminal degree in LIS in the US has been the masters degree.

Given these trends and the new roles for librarians we already discussed, today's library and information science students are getting a broad foundation of knowledge to prepare them for a range of roles both in libraries and in other information environments. At our School, the foundation courses focus on information communities, information retrieval and system design, information professions, and research methods. At our School, we provide an extensive array of current electives to prepare students for a wide range of career opportunities that can be applied in different environments. Here are just a few of the kinds of elective courses that students at the San José State University School of Information can take – they range from technology courses like Scratch, Cybersecurity, and The Emerging Future, to user experience and design thinking, to instructional and information literacy courses.

### What Students Are Learning Today

<p><b>Foundations:</b></p> <ul style="list-style-type: none"> <li>✦ Information Communities</li> <li>✦ Information Retrieval &amp; System Design</li> <li>✦ Information Professions</li> <li>✦ Research Methods</li> </ul>	<p><b>Electives (Selected):</b></p> <ul style="list-style-type: none"> <li>✦ Innovation and Participatory Practice in Libraries</li> <li>✦ Gamifying Information</li> <li>✦ Scratch</li> <li>✦ Library Services in the Digital Ages</li> <li>✦ The Emerging Future</li> <li>✦ Information Literacy and Learning</li> <li>✦ Instructional Design and Strategies</li> <li>✦ Design Thinking</li> <li>✦ User Experience</li> <li>✦ STEM</li> <li>✦ Cybersecurity</li> <li>✦ Linked Data</li> </ul>
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I have just submitted my manuscript for the second edition of my introductory textbook called *Information Services Today: An Introduction*. I have invited the leading thinkers and practitioners in the US and Canada to contribute to this important work. This new edition will be published in March 2018. This book addresses some of the global, societal, technological trends I shared with you today, as well as the competencies and skills needed to be an information professional poised for ongoing success in our dynamic information landscape. I added chapters in this second edition too to address some of the new and important areas that I see in our field, including strategic planning, change management, design thinking, data curation, user experience, social justice, and other important topics.

As I conclude, I want to leave you today with a few takeaways from this presentation.

First, libraries need to embrace change and technology in our field and continue to transform in response.

Second, the LIS field is evolving and needs to continue to evolve. I shared with you a number of trends and examples of what libraries are doing.

Third, librarians need to take a proactive leadership role in this new information landscape so they can better support and partner with their communities. We discussed some of the ways that this is already happening.

And finally, I want to leave you with an understanding of how LIS education is changing too; it is not staying static but is at the forefront of preparing new librarians to be leaders in the information field.

In sum, we have no way to predict the future, but we can prepare for it by continuously evolving, staying attuned to the needs of our communities, and adapting our services, library spaces, and content to these changes. If we do that, we will be poised for ongoing future success. And I have every confidence that our field will continue to evolve and be successful for many years to come.

It has been my pleasure to speak with you today and I look forward to meeting you during my stay in Japan. Thank you!

**Concluding Thoughts:  
A Transformative Future**

- Libraries need to embrace change and technology.
- LIS field is evolving and will continue to evolve.
- Librarians need to take a proactive and leadership role.
- LIS education is preparing graduates to be leaders in the information field and their communities.

Information Services Today  
An Introduction  
Second Edition  
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