Chapter 14
Innovative Technologies in Library Science

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ABSTRACT

Libraries provide physical and intellectual access to high quality information in its myriad formats. To fulfill their responsibilities, librarians have incorporated technology into most aspects of their practice. Librarians work with their communities to provide relevant resources and services. These resources are increasingly digital in format, and libraries incorporate technology to insure physical and intellectual access to them. Technology has transformed library spaces, both physical and virtual. Librarians also use technology to provide value-added content and services. The Library of Congress and OCLC exemplifies instititutions that leverage technology to provide optimum programs. This is explored in this chapter.

INTRODUCTION

Today's libraries aim to provide physical and intellectual access to high quality information in its myriad formats. Certainly, in this complex world filled with information, expanded through technology, and daunting decisions to make, people need to be efficient and discerning users and producers of information. To this end, librarians are not only evaluators, aggregators, organizers, disseminators, facilitators and instructors, but they are also synthesizers and network nodes. To fulfill their responsibilities, librarians have incorporated technology into most aspects of their practice.

LIBRARY SCIENCE AND ITS COMMUNITIES

Library science may be defined as the study of collecting, preserving, organizing, and making available recorded information in libraries. Today's libraries aim to provide physical and intellectual access to high quality information in its myriad formats. Technology as it is manifested in society poses several trends: social networking, increasing bandwidth—and content that fills that bandwidth, growth of personal/mobile digital devices, continued digital divide, miniaturization. Certainly, in this complex world filled with information, expanded through technology, and

daunting decisions to make, people need to be efficient and discerning users and producers of information. To this end, librarians are not only evaluators, aggregators, organizers, disseminators, facilitators and instructors, but they are also synthesizers and network nodes. To fulfill their responsibilities, librarians have incorporated technology into most aspects of their practice.

Starting in 2012, the International Federation of Library Associations and Institutions (IFLA) collaborated with stakeholders and experts from different disciplines to identify societal trends that would impact libraries. Their resultant 2013 list of five trends highlights technology as the key driving force.

1. Emerging technologies impact access to information, further affirming the need for information literacy skills.
2. Online education will make learning opportunities more accessible and disrupt educational paradigms.
3. Boundaries between data production and privacy will be refined.
4. Highly technology-connected societies will empower new groups and opinions.
5. New technologies will transform the global information economy.

In response, libraries need to provide broad-based physical and intellectual access to all of their communities. They will need to grapple with the tensions between intellectual property and intellectual freedom, especially as they play out in digital environments. By engaging in these issues, and providing inclusive support and solutions, libraries demonstrate their value and contribution to their communities' socio-economic sustainability and development.

Because of technology, libraries are transitioning from an "outside-in" to a "inside-out" model relative to their communities (Durán, Garcia, & Houdyshell, 2009). Traditionally, people had difficulty finding information resources; they were few and costly. Libraries located and collected these disparate sources into a central location to facilitate their access by the community. In addition, sources were usually organized and accessed by format so that the method of retrieving a book differed from retrieving an article. Libraries brought the "outside" in. Nowadays, information is usually abundant and can be accessed without large transaction costs. Entities are generating data and information that they want to share out. The library can manage these internal sources, and provide access to them by external populations: going from the "inside" out. Furthermore, users want one-stop retrieval, regardless of format. Discovery systems are also gaining popularity, the idea being that with one search, the user can discover many more resources in different formats than anticipated. The experience is much like traditional browsing. To gain more visibility, libraries are using external discovery social network environments such as Facebook, Flickr, and Twitter so that their resources and services are discoverable in other venues and systems.

Libraries are also considering the community – be it local or global -- as collaborators in developing the library program of resources and services. Libraries often co-sponsor events with local organizations, and they are now likely to Webstream and archive the occasion, often with the camera help of community volunteers. Libraries routinely use local volunteers to teach technology skills on the library computers or the public's own mobile devices. Libraries also collaborate with local companies and organizations to offer free and low-cost virtual tutoring, computer-maintenance services, oral history 'casting initiatives, and online career advice. Library users and organizations may maintain community-based Web pages (e.g., teen zones, virtual book clubs, support for persons with Autism Spectrum Disorders) as part of the library Website. Some libraries provide on-site publishing centers for their clientele to generate documents that might be added to the library collection. A few libraries are even introducing 3D printers for their community to create physical products. Librarians may worry about

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