Conclusion

Abstract

This final chapter of Library Technology Reports *(vol. 49, no. 7) "Technological Innovation: Perceptions and Definitions" provides additional analysis of the survey results shared in the previous chapter. While innovation is often portrayed in a positive light as the pathway to progress and development, engendering a culture of innovation and actual implementation of "innovative" ideas can be challenging. Note is made of a few of these challenges and the importance of clear focus and objectives. The chapter concludes with a few technological items that may someday—sooner or later—make their way into society and libraries.*

Librarians are . . . reinvisioning technology, architecture, instruction, access, and public services for a new model of patron. These efforts reflect an ongoing and self-conscious digital transition within the field, facilitated in the past several years by the proliferation of mobile communication devices, Web 2.0 applications, and free/open source software.[1]

> —Char Booth, *Informing Innovation*, 2009

For nonprofits, innovation is motivated by the desire to advance the public good. In a research library, the public good consists of the activities to support scholarly communication and the advancement of knowledge for faculty, students, staff, and the broader public community.[2]

> —R. C. Jantz, "A Framework for Studying Organizational Innovation in Research Libraries," 2012

Indeed, the current higher education environment, academic libraries included, is in a very exciting, albeit challenging, phase or, perhaps, a "new normal." The thrust of this research was to offer better understanding of what academic library leaders think about when they hear "technological innovation," and the ten questions in this spring 2013 survey shed some light on this. Unsurprisingly—but worth reaffirmation—a common factor apparent in responses to several questions is the importance of library patrons—their needs and what can make their life easier or more efficient. Rogers notes, "The innovation-development process often begins with recognition of a problem or need, which stimulates research and development activities designed to create an innovation to solve the problem or need."[3] New technologies and associated services that positively impact patrons' learning and research were often identified as a yardstick for innovation. Newness and the "level" of innovation—incremental or groundbreaking—also surfaced in several of the responses as important in judging innovation.

Responses to question 6, which listed thirty-two potentially innovative technologies, proved interesting. The extreme range of ratings was unexpected—each listed item had at least a range of seven, indicating divergent views for each and every item. Looking at the data more closely (in addition to the standard deviation figures), the diversity of ratings was reemphasized. If any one particular respondent had thought all items were major innovations or of tremendous value to the library community, the sum of that respondent's ratings could have been a maximum of 320 (a rating of 10 for each of thirty-two items). Figure 4.1 shows

how things added up for each respondent, ranged from high to low.[4] Four sums totaled less than 100, and six totaled 200 or higher, reemphasizing the broad diversity in opinion among library leaders when evaluating the collective set of thirty-two potential innovative items and services.[5]

Question 1 showed similar diversity, asking respondents to select up to three of the twenty listed words and phrases that they feel capture the essence of technological innovation. Looking at the detailed data, all but one of the twenty-four respondents *did* select three choices; one selected two choices. No single choice was picked by at least half of the respondents, and only six of the twenty choices were selected by 20 percent or more of the respondents. This echoes the observation shared in chapter 2, regarding the *GE Global Information Barometer*, when it was noted that no single definition of *innovation* was selected by more than 35 percent of the respondents. Clearly, there are differences among the two dozen respondents—all similar in their roles of leading academic libraries, but clearly holding, to some degree, varied and individual opinions. There may be any number of reasons why one library director may think of something as an innovation and another may not. To sum up a few highlights, here are some factors that some responses within this research appear to indicate as important in the perception of technological innovation:

- newness
- the origin of the innovation (within libraries or outside libraries)
- whether something is applied differently and uniquely in a library setting versus its use and application outside the library environment
- whether it's an incremental or fundamental change
- the adoption rate among other libraries (related to newness, perhaps)
- the match of the innovation to the local clientele of that library director's environment (in the sense of improving the end users' experience)

There are doubtless other factors that can influence the perception—and definition—of technological innovation in libraries. Whether it was an individual or many respondents marking a drafted choice for a question, or whether something was suggested in one or more of the free text comments, all of the above items, to a lesser or greater degree, seem to relate to the concept of innovation and the degree to which something is perceived as innovative.

The final question affirmed that several practices supportive of innovation were in place at respondents' libraries. More than 80 percent of respondents indicated

- innovation was mentioned in a significant library document

- they funded staff travel to library-related conferences or external events as well as participation in online webinars or associated events
- they've funded hardware and software that could be considered innovative

Perhaps just as significant, *all* choices were selected by at least a quarter of respondents, and nine of the thirteen choices were selected by half or more of all respondents—indicating that a majority of libraries have several practices in place that could contribute toward an atmosphere supportive of innovation. Regardless of whether the stage is set for innovation to begin (let alone be sustained), as with all things, there is a balance. Tempering the promise and zeal often associated with the word *innovation*, a few cautionary notes are equally in order. It was stated at the beginning that this research would not look at barriers to innovations; such research has existed for decades and continues. With that acknowledged, here are just a few cautionary notes, intended to provide nothing more than a modicum of balance to the conversation:

Respondent A	61
Respondent B	79
Respondent C	92
Respondent D	93
Respondent E	103
Respondent F	105
Respondent G	119
Respondent H	130
Respondent I	144
Respondent J	146
Respondent K	166
Respondent L	175
Respondent M	177
Respondent N	185
Respondent O	186
Respondent P	189
Respondent Q	195
Respondent S	200
Respondent T	202
Respondent U	204
Respondent V	204
Respondent W	242
Respondent X	254

Figure 4.1
Survey question 6 on innovative technologies, summary of ratings by each respondent

- "Using technology for some practical purpose, and not for the sake of using technology, must be the clear objective. . . . [Assa said,] 'Some faculty, in an effort to use the latest buzzword or receive the next big grant, are testing technology simply for the sake of technology, rather than using technology as a tool for learning. . . . When people focus too much on technology, they lose sight of the true purpose of technology, which is to facilitate learning in the classroom.'"[6]
- "Maintaining and assessing front-line technologies is a demanding iterative process that requires long-term resource allocation and personal commitment from many stakeholders. A nagging question remained—if we build this, will our students care? . . . Finding ourselves spread increasingly thin in our ability to develop new services while supporting existing ones, we determined that actual user needs and expectations should be

more effectively incorporated into the planning and evaluation process. In order to create services that better contributed to the overall library experience, we needed to understand how students actually interacted with libraries and technology, instead of how we assumed that they did."[7]

- "Many library decisions are based on assumptions about patron expectations, and generational arguments have strengthened our collective conviction that user relationships to libraries and technology are changing in age-predictable ways. Research consistently indicates that younger respondents tend to own more mobile tools and use more social sites than ever before. However, this does not necessarily translate to a viable audience for library tools built on these platforms, nor does it reflect the composition or needs of a given campus."[8]
- "Some have described changing colleges and universities as akin to turning an aircraft carrier. Unlike a small pleasure boat that can maneuver quickly and change course rapidly, the aircraft carrier requires a carefully planned maneuver and a large berth to complete its turn. While information technology has had a significant impact on the Net Generation, practices and expectations within the academy remain relatively unchanged."[9]
- "The Net Generation cares about the activity technology enables, not the technology, per se. The use of technology to improve student services will be critical to the academy. Yet, it's not about technology. Technology is a tool—it represents the means, not the desired outcome. . . . Before focusing on technology, student service professionals must articulate a clear and unambiguous vision that provides the framework for the technology."[10]
- "Innovations in information technology have been both a blessing and a curse as IT innovations have simultaneously increased user expectations and disrupted the information life-cycle. Many information tasks formerly handled by people have been automated leading to disintermediation, which in many cases is beneficial to end-users but displaces information professionals."[11]
- "Libraries, as a whole, tend to be mature organizations, and thus they have developed an ability to consistently replicate what they have been good at doing in the past. This proves to be an immense hurdle to organizations seeking to become innovative. The leaders of some mature organizations have stated to me that their innovations occurred "in spite" of their organizations. Such radical statements point to the ability of human imagination, ingenuity, and sheer passion to overcome existing structural and cultural limitations."[12]

One thing it's hoped this research has reemphasized is the need for focus, strategy, direction. Speaking on the importance of focus, Dempsey remarks, "As libraries position themselves as important partners within their institutions, . . . they cannot continue to spend a lot of time on activities that replicate what is being done elsewhere and do not create real value for their institutions. Strategy is about making choices that increase impact. It is about moving resources to where there is most benefit, and finding the right level at which things should be done."[13] Two words that come to mind in an ever-changing, challenging environment are *impact* and *sustainable.* As doubtless all readers know, a word closely associated with *impact* is *assessment.* For nonprofits with limited resources—whether monetary, staffing, or simply time and competing priorities—these words seem critical when thinking about innovation—whether in the decision to pursue an idea at the very start, or years later when looking back and trying to assess.

To conclude this issue of *Library Technology Reports,* what, then, does the future hold for technology and libraries? Almost certainly, continual change, which can be stressful, but exciting. Consumer technologies will continue to heavily influence many developments. Dempsey notes, "Previously, work or educational technology was more advanced than consumer technology. Now, expectations are set by consumer experiences which are often richer than work/the library/the school/etc. offers. Systems and services are continually in need of change."[14] A recent *New York Times* article noted thirty-two "Innovations That Will Change Your Tomorrow."[15] Among other things, these included items with a strong technology component:

- information displays not confined to a traditional monitor (e.g., information displayed on kitchen tables and refrigerators)
- video games embedded in subway handholding straps
- monitors that monitor your sitting posture
- physical movements used to replace passwords
- shopping carts using Kinect to guide you to desired items on a grocery store shelf

Closer to the educational arena, Eisenberg and Fullerton offer a few suggestions for future developments:

- avatars and holograms that assist in the creation and communication of knowledge
- more contextually aware search tools that retrieve relevant information and present it in a manner best suiting the researcher
- wearable or implanted nano-devices with advanced communication and processing capabilities
- "intelligent" physical objects that can carry out actions and be addressed (e.g., walls, windows, etc.)
- virtual study rooms not bounded by physical study room limitations[16]

Leaving the future alone, and looking just at the present, there are certainly encouraging examples of libraries doing really—let's use the word—*cool* things, and in many cases, very tangible things. The ABC news station in Raleigh-Durham, North Carolina, recently ran a story mentioning several fascinating technologies within the new library at North Carolina State University, which the reporter referred to as "five floors of innovation."[17] Several years ago, the Harvard Law School Library established a "Harvard Library Innovation Lab," which describes itself as "a small group within the Harvard University Library system that implements software ideas about how libraries can be ever more valuable. . . . We hack libraries . . . in the good sense of discovering and delivering more capability and value."[18] A visit to its webpage shows some pretty interesting projects. Conferences such as the LITA National Forum and the Coalition of Networked Information Membership meetings continue to inspire with presentations and updates of projects that could be labeled as . . . *innovative.*

As noted by Eisenberg and Fullterton, "Christensen, Horn, and Johnson argued that if schools cannot incorporate technological innovations to personalize learning, then students will pursue education *outside of* traditional schools instead of *within* them. If schools do not adapt, they will meet the same fate as businesses such as Digital Equipment Corporation, which dominated the business computer market in the 1960s and 1970s but went out of business when it failed to respond in time to the growing personal computer market."[19] So to all the fellow technologists out there . . . hold on for the ride, and have fun.

Notes

1. Char Booth, *Informing Innovation: Tracking Student Interest in Emerging Library Technologies at Ohio University* (Chicago: Association of College and Research Libraries, 2009): 7.
2. R. C. Jantz, "A Framework for Studying Organizational Innovation in Research Libraries," *College & Research Libraries* 73, no. 6 (November 2012): 525.
3. Everett M. Rogers, *Diffusion of Innovations* (New York: Free Press, 2003), 137.
4. Note: One of the twenty-four survey respondents chose not to answer this question, question 6.
5. Note: Most respondents provided ratings for all the items, though a few respondents chose not to rate the occasional item. Overall, out of 736 possible provided ratings (23 participating respondents, 32 items to rate each), there were only 20 instances (2.7 percent) where a rating was not provided.
6. Ben McNeely, "Using Technology as a Learning Tool, Not Just the Cool New Thing," in *Educating the Net Generation*, ed. Diana G. Oblinger and James L. Oblinger (Boulder, CO: EDUCAUSE, 2005), 4.9–4.10, http://net.EDUCAUSE.edu/ir/library/pdf/pub7101.pdf.
7. Char Booth, *Informing Innovation: Tracking Student Interest in Emerging Library Technologies at Ohio University* (Chicago: Association of College and Research Libraries, 2009): 1.
8. Ibid., 15.
9. J. James Wagner, "Support Services for the Net Generation," in *Educating the Net Generation*, ed. Diana G. Oblinger and James L. Oblinger (Boulder, CO: EDUCAUSE, 2005), 10.1, http://net.EDUCAUSE.edu/ir/library/pdf/pub7101.pdf.
10. Ibid., 10.4.
11. Derek Rodriguez, Beth Ellington, and Barbara Wildemuth, "Information Professionals 2050—Industry Panel," in *Information Professionals 2050: Educational Possibilities and Pathways*, ed. Gary Marchionini and Barbara Moran (Chapel Hill: UNC-CH School of Information and Library Science, 2012), 101, http://sils.unc.edu/sites/default/files/publications/Information-Professionals-2050.pdf.
12. Kathryn Deiss, "Innovation and Strategy: Risk and Choice in Shaping User-Centered Libraries," *Library Trends* 53, no. 1 (Summer 2004): 23–24.
13. Lorcan Dempsey, "Libraries and the Informational Future: Some Notes," in *Information Professionals 2050: Educational Possibilities and Pathways*, ed. Gary Marchionini and Barbara Moran (Chapel Hill: UNC-CH School of Information and Library Science, 2012), 114, http://sils.unc.edu/sites/default/files/publications/Information-Professionals-2050.pdf.
14. Ibid., 123.
15. Heena Ko, Jacky Myint, Sara Cwynar, and Samantha Henig, eds., "32 Innovations That Will Change Your Tomorrow," *New York Times*, June 1, 2012, www.nytimes.com/interactive/2012/06/03/magazine/innovations-issue.html?_r=0.
16. Michael Eisenberg and Sean Fullerton, "ED and INFO 2052: Oh, the Places You'll Go," in *Information Professionals 2050: Educational Possibilities and Pathways*, ed. Gary Marchionini and Barbara Moran (Chapel Hill: UNC-CH School of Information and Library Science, 2012), 11–12, http://sils.unc.edu/sites/default/files/publications/Information-Professionals-2050.pdf.
17. "NC State Unveils Hi-Tech Library," Elaina Athans (reporter), ABC Channel 11, Raleigh-Durham, NC, April 3, 2013, http://abclocal.go.com/wtvd/video?id=9051966.
18. "The Harvard Library Innovation Laboratory: FAQ," *Harvard Law School*, accessed May 18, 2013, http://librarylab.law.harvard.edu/faq (page now discontinued).
19. Clayton M. Christensen, Michael B. Horn, and Curtis W. Johnson, *Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns* (New York: McGraw-Hill, 2008), cited in Eisenberg and Fullerton, "ED and INFO 2052" 4.