

Hot tech trends in libraries: flexibility and changeability is the new sustainability

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Context: a changing global environment

I thought it might be good time to write an editorial after being an editor of *Library Hi Tech News (LHTN)* for over five years and as a recent retiree of Rutgers University Libraries with 40 years of experience. So much is happening in terms of technology and disruption. One of the joys of LHTN is seeing the articles and columns that come across my desk from all over the world, and looking at trends in library blogs, Twitter feeds and non-library conferences such as the huge Consumer Electronics Show (CES). I've been attending CES over the past several years and plan to attend (along with 200,000 others) this January 2019 too. In fact, I needed to book my airfare and hotel in March 2018! One thing I've noticed and maybe you have to, is how fast technology is moving and how difficult it is to keep up. Many of the institutional hallmarks of libraries we take for granted are or soon will no longer be relevant or will morph into new services, resources and tools. Changes in technology are and will continue to force and adapt to changes in how we work and identify ourselves in many parts of the world.

Disruption is the new normal. Yesterday's cable is now Internet connected choices. What happened to disk drives and hard drives and DVDs? Right now, it's all about the cloud. And who can even remember using Dialog or BRS via dial-up services? And how relevant are websites when users want interactive mobile apps and mobile learning. And how about reference when there are a myriad of experts and information available for free online or via YouTube? And, in higher education, it might be not only getting a degree but demonstrating various competencies by gathering credentials via self-learning

and attaining digital badges. But, in the end, who but us are going to put a focus on authority, bias, relevancy, and lifelong learning?

What's in a name? A librarian still denotes that we work in a library. Even "library schools" have morphed into I-Schools and special librarians have already been moving toward the title of information specialist or knowledge workers. Not only are these titles more relevant in today's world, they also bring with them greater prestige and in many cases, larger salaries. Not to put down the term library, because in many geographic settings, a physical space of a library is critical and crucial for many purposes, even if it is just a space to gather, study and learn.

So, that also brings up the issue of what is a library? Is it a building? Is it a website? Is it on your mobile device? Is it a single defined space, or is it any or all of these options? I think so. A core role for us is to define your community and their needs. Is the library involved in economic development? Does it serve an older constituency? Is it in academia which students and faculty access the majority of your services anytime anywhere? Is it a specialist community such as a hospital or agriculture experiment station? Where is your office? Is it with your users or are you in a building on the other side of campus? Does it matter where you are and where your users are? No matter what, technology today allows us to go wherever our users might be and possibly in the not too distant future, it could be a team of information specialists serving a similar clientele across a wide geographic area? Do we focus on immediate reactive needs or do we look at the entire picture? I have heard corporate librarians bemoan that academic libraries are not preparing students to truly be information literate,

aware of intellectual property issues and lifelong learning. Are we teaching our students how to be successful at the university or are we teaching them lifelong learning skills?

As I've noted in the past it seems that public libraries are now leaders with appropriate technology and because of less hierarchy and a history of outreach and community engagement. Public libraries were the leaders in services such as chat reference and maker spaces and now many are stepping up to the role in curating authoritative online e-learning websites and mobile applications. In developing countries they play an even more prominent role in the dissemination of health and sustainable agriculture practices and are often leaders in community economic development.

Trending, bending, blending

It might be useful to look at some recent top ten tech trends lists. First is LITA's Top 10 Trends from the ALA Annual 2018 Conference (www.ala.org/lita/ttt) which include Quantum Computing, Digital Gaslighting (being manipulated by others via digital tools), Blockchain Technology (list of records (blocks) that form a train, Psychometrics, Digital Libraries interfacing with the public via Wi-Fi on public transit, Digital libraries embedded in public housing, Death of Transparency, Fragmentation and Fluidity, Library Databases in the Age of Alexa and Siri, Next-Generation Learning Management Systems. My take – it really is about how technology has become integrated into all aspects of our lives including libraries. It's more about how technologies are being employed rather than the technologies themselves.

IFLA takes broader strokes in their update to their trends report which focus

more on societal implications of technology in general on libraries. In their 2018 update (<https://trends.ifla.org/update-2018>), IFLA notes or asks as part of the focus of their update the following four themes:

1. How libraries can prepare for an uncertain future.
2. How can libraries deal with attacks on privacy, access and truth itself.
3. How libraries respond to the power of major internet companies (Are we even big enough to have an effect?).
4. Can libraries remain relevant in the global information infrastructure through community networks? (Figure 1)

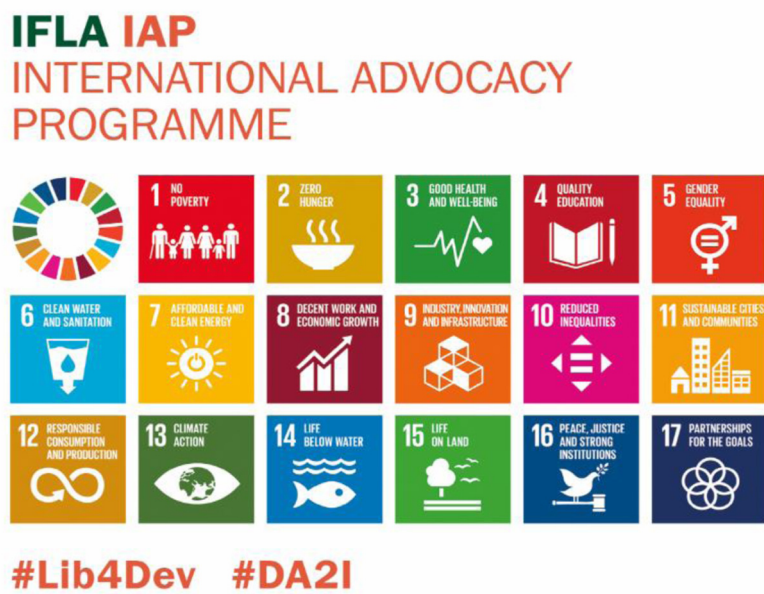
Educause and the New Media Consortium in their 2018 version notes that notes in their 2018 Horizon Report (<https://library.educause.edu/resources/2018/8/2018-nmc-horizon-report>) reviews what are short-term, mid-term and long-term trends, as well as technologies that are solvable and those that will likely have an effect on higher education and libraries that are still difficult to grapple with. In the short term, the focus is on measuring learning and

redesigning learning spaces. In the mid-term, it's an increase in open education resources and interdisciplinary studies. Long term it is increased innovation and cross-institutional and cross-sector collaboration. Nothing new here as all of these trends are occurring now to some extent and it is important to note that the focus of the Horizon Report is specifically focused on learning. Solvable are authentic learning and digital literacy. Issues that are current difficult to solve are adapting organizations to the future of work and digital equity. Complex issues that are still elusive to define and address are economic and political pressures, rethinking our roles as educators and crystal balling what will be important technological developments for academia. Finally, the report focuses on actual technologies that are short-term (analytics and maker spaces), those that will likely be adopted in the next few years (adaptive learning and artificial intelligence) and those at least four or five years down the road (mixed reality and robotics). Again, nothing new here and all of these trends and technologies are being employed to some extent right now.

And how about the Special Libraries Association. Although they have no specific listing, Stephen Abrams does have an official SLA website (www.sla.org/info-tech/). According to him, current technologies and technological developments affecting special libraries include consumer trends in technology, content and data, publishing, payment models and learning. Abrams is the only one that specifically lists bridges between consumer technologies and libraries and for me, more relevant as those technologies used by our user communities are the ones that will have the greatest impact on libraries and the way we work and deliver information and services. Some of the technologies specifically noted are experience portals such as those that track competitive intelligence and scalable strategies that focus on user needs and goals, virtual libraries of data, analytics and user experiences, dashboards (or continual timely access to user needs), streaming media, mobile devices, cloud computing, discovery systems and new search tools that focus on issues such as context and visualization).

Finally, how do these lists compare with the top trends from the Consumer Technology Association that puts on the huge CES each year? The 2019 trends won't be announced until the 2019 CES Conference. But as a preview from an audit of last year's conference (<https://cdn.ces.tech/ces/media/pdfs/ces-2018-audit-summary.pdf>), here are major trends based on number of attendees that identified themselves as representing these industries: "Computer Hardware & Software, 23,464; Wireless Devices, 21,842; Smart Home/Appliance/Energy Management, 20,901; Automotive/Vehicle Technology, 20,788; Other Consumer Technology, 20,787; Mobile Apps, 17,649; Wearables, 17,321; Telecommunications and Infrastructure, 14,909; Accessories, 14,297; Audio, High-End/High-Resolution, 14,059; Digital Media/Online Media, 14,012; Augmented Reality/Virtual Reality, 13,631; Sensors, 13,211; Video, 13,026; Health and Biotech, 12,837; Lifestyle, 11,864; Robotics, 11,681; Drones, 11,597; Gaming, 11,443; Internet Services, 10,889."

Figure 1. IFLA International Advocacy Program\Creative Commons License



There are some significant technologies that are not in any of the library and education-focused listings or only mentioned in passing. Here are a few examples. Smart home-connected devices (although partially, SIRI and Alexa were noted in the ALA report), but not one listing noted the power and speed of 5G. Little attention was placed on wearables and may not be enough attention was put on robotics and related to that, artificial intelligence. For example, IBM's Watson has become prominent in using data and artificial intelligence for medical care and can be easily adapted for other settings. And here are some additional trends that do not appear prominently in these listings (again, some are mentioned in passing), particularly those that are being used in other non-library settings. Some examples: going beyond connected devices to a greater focus on smart cities and how smart libraries can be integrated; librarians everywhere either embedded into departments or even being able to work anywhere they are as many of our user communities work at a distance; developing idea banks and being involved more in their communities efforts towards innovation and entrepreneurship; and enormous is the increasing role of one's mobile device or wearable being their major connection for information, collaborating and learning. And then there are critical global issues of digital literacy, digital democracy and neutrality and the increasing digital divide.

Concluding remarks – LHTN's increased relevancy in a changing world

Not surprising, IFLA looks at technology in a holistic manner and in the broadest sense and of course it is via a global lens. IFLA has been very focused on the 2030 UN Goals for Sustainability

(www.ifla.org/libraries-development) and the role of libraries. I can see, on one hand, that libraries need to respond to technological changes as well as putting consumer technologies in context when developing services and resources. But, at the same time, as professionals, it is our responsibility to focus on the role of technology in terms of our missions and the communities we serve and engage with and that is what sustainability is all about – no matter what technologies exist or may exist, it is how we employ these technologies in a proactive way to make our work better and more meaningful to the communities we serve. Of course, ALA, SLA, Educause and the New Media Consortium as well as the Consumer Technology Association are probably focused on well under 50 per cent of the world's population. At the other end, we have countries or major areas in countries around the world that do not even have the infrastructure for electricity, food security and environmentally sustainable livelihoods. There is an increasing digital divide and as a result an increasing socioeconomic divide. It really is not the technology itself that is important, it is what is the appropriate use of technology that can be employed to help socio-economic development, which I believe is a major focus of the UN Sustainability Goals. Yes, in the West, we have a wealth of technology to talk about and experiment with, but I also believe as a profession we must also be global citizens and participate in the use of technologies for the common good.

Readers of *LHTN* should be aware of the special niche this journal plays in the world of library technology. There is a reason why many of our articles are written and cited by librarians around the world. As the editor, I strive to strike a balance of articles on the newest technologies on the horizon with others that deal with ubiquitous and

Figure 2. *LHTN* Word Cloud



appropriate uses of technology (maybe often not the newest but being used in imaginative and innovative ways) for community engagement, no matter what the community might be in the world. *LHTN* articles continue to have many more downloads each year ever since I became the editor. More than most library and information technology media, *LHTN* has a very wide geographic readership. Now, with article-level publishing (see www.emeraldgroupublishing.com/authors/index.htm and www.emeraldgroupublishing.com/authors/editing_service/pdf/alp.pdf), we are getting our edited articles out to the community as soon as possible as being published online with a unique DOI that can be cited just as if they were published in print. No longer does an author have to state that their articles are in press or accepted. The articles will appear in print at a later date and for some will be part of their historical record but in other parts of the world without good online access, will still be quite relevant and timely (Figure 2).

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