2023 Environmental Scan

ACRL Research Planning and Review Committee

Contents

Introduction

Every two years, the ACRL Research Planning and Review Committee conducts an environmental scan to summarize the key themes and trends in higher education and their potential implications for academic libraries. Committee members determined this year's themes based on a review of news media, academic literature, grey literature, and other sources from 2021 and 2022. While themes such as scholarly communications, student assessment, and shared print continue to have impact, new themes around legislative interference, controlled digital lending, and digital transformation have also emerged. Common threads can be found across these themes including an increased focus on diversity, equity, and inclusion, the enduring legacy of COVID, and the continued impact of technology. The extensive footnotes provide a wealth of additional information and avenues of inquiry for those interested.

Economics & Administration of Higher Education

With campuses nationwide returning more fully to in-person instruction during this past year, student enrollment and graduation rates have shown signs of recovery. According to data collected by the National Student Clearinghouse (NSC) Research Center, the decline in undergraduate enrollment experienced in fall 2022 was closer to pre-pandemic rates–a decline of 1.1% compared to 2.1% in fall 2021 and 3.2% in fall 2020. While enrollment at four-year institutions declined slightly, community colleges, on the other hand, experienced a 0.9% increase in freshmen enrollment this fall. In contrast, enrollment at Historically Black Colleges and Universities grew by 2.5% this year, but enrollment at Hispanic-Serving Institutions was slowly recovering, with a 1.2% decline this fall compared to 4.8% in fall 2021.[1] While there has been improvement, enrollment has continued to decline overall over the last two years. It appears that the pandemic simply exaggerated an existing downward trend in higher education enrollment.

In addition to demographic trends, factors such as a decline in underrepresented groups' enrollment, lower rates of high school graduates, continued growth of online degree programs, unsuccessful transitions from two-year to four-year institutions, and competition from the job market have created challenges for universities and colleges in providing affordable and sustainable education for a diverse student population.[2] On the other hand, based on preliminary

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[1] Sedmak, Todd, "Fall Undergraduate Enrollment Declines at a Slower Pace but Nearing Pre-Pandemic Rates," National Student Clearinghouse (blog), October 20, 2022. https://www.studentclearinghouse.org/blog/fall-undergraduate-enrollment-declines-at-a-slower-pace-but-nearing-pre-pandemic-rates/.
[2] Knox, Liam, and Sara Weissman, "As the Pandemic Wanes, All Eyes Are on Enrollment," Inside Higher Ed, October 17, 2022. https://www.insidehighered.com/news/2022/10/17/enrollment-trends-new-and-old-emerge-pandemic

federal data, the pandemic did not have an impact on the graduation rate, which has continued to increase each year in recent decades.[3]

Student debt continues to be a concern. The American Council on Education found promising signs that "higher education as a whole is trying to minimize undergraduate student loan debt," but noted that graduate student debt has grown rapidly at the same time.[4] Although there are fewer graduate borrowers than undergraduate borrowers, the total amount disbursed to graduate students was much higher than expected.[5] To alleviate the pandemic effect on the student loan burden and make higher education more affordable, in August 2022, President Biden and Secretary of Education Cardona announced plans to support student borrowers through debt cancellation of up to $20,000 for eligible Pell Grant recipients and other actions that will provide nearly $48 billion in loan relief to over 1.8 million borrowers.[6] However, implementation of this loan relief is currently blocked by court orders. While waiting for the Supreme Court to review this case, the U.S. Department of Education extended the pause on student loan repayment, interest, and collection.[7]

Even with the financial aid provided to Pell Grant recipients, data shows that there are fewer affordable public higher education options for low-income students than 10 years ago. According to the National College Attainment Network, higher education has become less affordable over time–by 2019-2020, only 40% of community colleges and 24% of four-year institutions in their study were deemed affordable.[8]

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[3] Nick Perez, "Whose Pandemic-Era Graduation Rates Beat, or Fell Below, the Average?," The Chronicle of Higher Education, December 1, 2022, sec. News. https://www.chronicle.com/article/whose-pandemic-era-graduation-rates-beat-or-fell-below-the-average.

[4] "Facts in Hand: Who Is Borrowing for College?," American Council on Education, May 2022. https://www.acenet.edu/Documents/Facts-in-Hand-May-2022.pdf.

[5] American Council on Education, "Facts in Hand: Who Is Borrowing for College?,"

[6] The White House, "FACT SHEET: President Biden Announces Student Loan Relief for Borrowers Who Need It Most," The White House, August 24, 2022. https://www.whitehouse.gov/briefing-room/statements-releases/2022/08/24/fact-sheet-president-biden-announces-student-loan-relief-for-borrowers-who-need-it-most/.

[7] Press Office, U.S. Department of Education, "Biden-Harris Administration Continues Fight for Student Debt Relief for Millions of Borrowers, Extends Student Loan Repayment Pause | U.S. Department of Education," Accessed November 23, 2022. https://www.ed.gov/news/press-releases/biden-harris-administration-continues-fight-student-debt-relief-millions-borrowers-extends-student-loan-repayment-pause.

[8] The National College Attainment Network, "The Growing Gap 2022: Public Higher Education's Declining Affordability," Accessed December 1, 2022. https://public.tableau.com/app/profile/bill.debaun.national.college.access.network/viz/TheGrowingGap2022PublicHigherEducationsDecliningAffordability/Dashboard.

At the same time, government funding for higher education has generally been maintained during the pandemic, and state funding is expected to increase this year.[9] However, higher education institutions have not been affected equally. Wealthy institutions have found opportunities to acquire and merge with other institutions as well as grow their wealth through endowments.[10] Before the pandemic, there was also a nationwide rise in consolidations among regional public universities and colleges to increase efficiency. In 2021, Ithaka S+R analyzed a series of case studies on this consolidation trend and revealed complexities related to the implementation process and the impact on equity.[11] These mergers showed early signs of success in evidence of student enrollments, retention, and graduation rates. However, the process was not without resistance from stakeholders.

Given that higher education institutions are experiencing financial and organizational changes, how will these changes impact student lives, and what policies can be established to better serve students during these unpredictable times? While Ithaka S+R found evidence of success in their consolidation studies, they also warned that underserved students (for example, students of color and lower-income students) are at higher risk of being left out during these changes as well as faculty and staff of color. Especially when a minority-serving institution is involved in a consolidation, careful planning, preparation, and engagement is needed to create opportunities to benefit underserved and underfunded students, programs, faculty, and communities.[12]

A survey of senior administrators at U.S. colleges and universities revealed that their immediate top priorities for fall 2021 included supporting student well-being and developing strategies for meaningful diversity, equity, and inclusion.[13] Conversely, they ranked external pressures and challenges such as strengthening civic and democratic engagement and contesting the spread of misinformation near the bottom of their list of concerns along with re-envisioning and supporting liberal arts programs. The finding was partially confirmed by another national survey of campus

[9] Annahita Jimmerson, "Annual Grapevine Compilation of State Fiscal Support for Higher Education Results for Fiscal Year 2022: PRESS RELEASE," https://shef.sheeo.org/wp-content/uploads/2022/06/SHEEO_Grapevine_FY22_PressRelease.pdf

[10] Lindsay Ellis, Nell Gluckman, Dan Bauman, and Francie Diep, "4 Emerging Trends You Should Know About," The Chronicle of Higher Education, February 11, 2022, sec. News. https://www.chronicle.com/article/4-emerging-trends-you-should-know-about.

[11] Jones, Sosanya, "A Georgia Case Study: A Look at the University System Consolidations with an Eye Towards Race, Ethnicity, and Equity," Ithaka S+R, August 30, 2021. https://doi.org/10.18665/sr.315852; Schonfeld, Roger, and Jane Radecki, "Consolidating the University of Wisconsin Colleges: The Reorganization of the University of Wisconsin System," Ithaka S+R, August 30, 2021. https://doi.org/10.18665/sr.315853; Kurzweil, Martin, Melody Andrews, Catharine Bond Hill, Sosanya Jones, Jane Radecki, and Roger Schonfeld, "Public College and University Consolidations and the Implications for Equity," Ithaka S+R, August 30, 2021. https://doi.org/10.18665/sr.315846.

[12] Kurzweil et al., "Public College and University Consolidations and the Implications for Equity."

[13] Scott A. Bass, Laura McMahon Fulford, and Ashley Finley, "Academic Year 2021-2022: Are College Campuses Ready?," Association of American Colleges & Universities and American University, 2021. https://dgmg81phhvh63.cloudfront.net/content/user-photos/Research/PDFs/Survey-Report-Final-9.23.pdf.

stakeholders about the most crucial challenges confronting higher education after the pandemic.[14] Facing financial constraints and overcoming persistent inequalities are the top concerns identified by stakeholders from all types of institutions. When asked about the top priorities for their institutions regarding undergraduate teaching and learning, nearly 70% highlighted the need to improve and increase diversity at their institution.

According to an international survey of researchers and research office leaders across the U.S., the UK, and Australia, research funding remains a top priority, together with an increasing focus on research collaboration and interdisciplinary work among researchers.[15] Overburdened researchers need stronger research support in various areas, but research office leaders reported limited time and resources to provide the needed services. Research office leaders also reported difficulties in maintaining online portals of research expertise and demonstrating research impact using both traditional and other metrics.

A key area in which libraries and research offices have started to develop collaborations is providing support for compliance-related areas, such as open access compliance.[16] Ithaka S+R observed optimistically that the global research enterprise continued to grow during and after the pandemic. For example, as a result of relief bills in the U.S., funding agencies boosted academic research in science, technology, engineering, mathematics, and medicine. University leaders generally described their institutional strategies as geared more toward the goal of growing the size, quality, and impact of their research enterprise rather than enrollment.[17] Another Ithaka S+R report calls special attention to "research cores," defined as "shared research enablement facilities that are used on a cross-department basis," which have become a key component to the research enterprise.[18] Similar to information technology and library departments on campus, research cores are going through a period of internal centralization and cross-institutional coordination. Combining cost recovery with subsidization, seeking grants and other sources of public funds, emphasizing sharing and access, and being adaptive to user needs, the business model of research cores might offer inspiration to other departments within the research enterprise.[19]

[14] Finley, Ashley. "Campus Challenges and Strategic Priorities in a Time of Change: A National Survey of Campus Stakeholders." Association of American Colleges and Universities, 2021.

[15] "Supporting Academic Research Understanding the Challenges: Findings from a 2022 Study of Researchers and Members of Research Offices in the UK, the U.S. and Australia." Exlibris and Alterline, 2022. https://discover.clarivate.com/supporting_academic_research_2022_alterline_report/.

[16] "Supporting Academic Research Understanding."

[17] Cooper, Danielle, Catharine Bond Hill, and Roger Schonfeld. "Aligning the Research Library to Organizational Strategy." Ithaka S+R, April 14, 2022. https://doi.org/10.18665/sr.316656.

[18] "Cooper et al., "Aligning the Research Library."

[19] Bai, Yuzhou, and Roger Schonfeld. "What Is a Research Core? A Primer on a Critical Component of the Research Enterprise." Ithaka S+R, December 6, 2021. https://doi.org/10.18665/sr.316205.

Implications

- When providing support for undergraduate student learning and success, libraries have to assess the unique needs of underserved user groups. Libraries are uniquely positioned and have the ability to develop accommodations and services to meet these needs.
- Supporting affordable higher education and reducing student costs are two strategic opportunities for academic libraries to directly impact the lives of students in higher education.
- As higher education institutions focus on growing their research enterprise, library leaders should identify and strengthen areas where libraries could make unique contributions to research support, separately or in collaboration with other departments.

Polarization, Politicization, and Civic Discourse

Darrell M. West, writing for the Brookings Institution, recently stated that "Democratic systems require the free flow of information, mechanisms to hold leaders accountable, and healthy civic discourse. Many of these features are under attack right now in the knowledge sector, with ominous consequences for universities, nonprofits, and think tanks."[20] The philosopher John Dewey over one hundred years ago argued that it is education that continually creates the next generation of democratic citizens.[21] Academic librarians and information professionals in higher education both play a role in representative democracy through our roles as educators but are also affected by the state of civic discourse, academic freedom, and other aspects of the contemporary political climate. This is an exceptionally important topic as Americans are divided, politically polarized, and quickly losing faith in American democracy.[22]

Some examples of the current relationship between state legislatures and higher education include a failed attempt to eliminate tenure in Iowa's three public universities[23] and Florida Bill SB 7044, allowing the Florida Board of Governors, the governing body for the State University System of Florida, to adopt regulations requiring "each tenured state university faculty member

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[20] West, Darrell M, "Why Academic Freedom Challenges Are Dangerous for Democracy." *Brookings* (blog), September 8, 2022. https://www.brookings.edu/blog/brown-center-chalkboard/2022/09/08/why-academic-freedom-challenges-are-dangerous-for-democracy/.

[21] Dewey, John, *Democracy and Education: An Introduction to the Philosophy of Education*, New York: Macmillan, 1916.

[22] Epstein, Reid J, "As Faith Flags in U.S. Government, Many Voters Want to Upend the System," *The New York Times*, July 13, 2022, sec. U.S. https://www.nytimes.com/2022/07/13/us/politics/government-trust-voting-poll.html.

[23] Gruber-Miller, Stephen, "Iowa Legislature Won't Ban Tenure at Public Universities This Year after Bill Fails to Advance," *The Des Moines Register*, April 1, 2021. https://www.desmoinesregister.com/story/news/politics/2021/04/01/iowa-legislature-bill-ban-tenure-public-universities-professors-fails-advance/4836676001/.

to undergo a comprehensive post-tenure review every 5 years."[24] This would include addressing "performance metrics," "compensation considerations," and "productivity." Additionally, Tennessee House Bill 2670 states that a "public institution of higher education shall not:...Conduct any mandatory training of students or employees if the training includes one (1) or more divisive concepts."[25] Such divisive concepts include "a meritocracy is inherently racist or sexist" and "All Americans are not created equal and are not endowed by their Creator with certain unalienable rights, including, life, liberty, and the pursuit of happiness." The legislation also notes it "shall not be interpreted to:...Infringe on the rights of academic freedom of faculty in public institutions of higher education."[26]

Overall "36 states have adopted or introduced laws or policies that restrict teaching about race and racism"[27] though such legislation primarily concerns K-12 education. The nonprofit PEN America labels such attempts "educational gag orders," noting that as of August 2022 such bills are increasingly targeting LGBTQIA2S+ identities, becoming more punitive, and "have targeted higher education more frequently" in 2022 than in 2021.[28] As illustrated by two recent essays in the *Chronicle of Higher Education*,[29] while there is a long history of cooperation between government and higher education, there has also long been tension and political interference. In the current climate of polarization and politicization, heightening tensions continue to impact policy, promotion and tenure, legislation, the perceived value of college degrees, and funding.[30]

Academic Freedom Debate

Free speech debates often occur through ideological or political lenses. Scholars have argued that interpretations of "freedom of speech" have been perverted by alt-right groups conflating free

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[24] Florida Senate, Senate Bill 7044, Pub. L. No. SB 7044 (2022). https://www.flsenate.gov/Session/Bill/2022/7044/?Tab=BillText.

[25] Tennessee General Assembly, House Bill 2670, Pub. L. No. HB2670 (2022). https://wapp.capitol.tn.gov/apps/Billinfo/default.aspx?BillNumber=HB2670&ga=112.

[26] Tennessee General Assembly, House Bill 2670.

[27] Stout, Cathryn and Wilburn, Thomas, "CRT Map: Efforts to Restrict Teaching Racism and Bias Have Multiplied across the U.S.," Chalkbeat, February 1, 2022. https://www.chalkbeat.org/22525983/map-critical-race-theory-legislation-teaching-racism.

[28] Young, Jeremy C. and Friedman, Jonathan, "America's Censored Classrooms," PEN America, August 17, 2022. https://pen.org/report/americas-censored-classrooms/.

[29] Fischer, Karin, "A Playbook for Knocking Down Higher Ed," *The Chronicle of Higher Education*, October 18, 2022. https://www.chronicle.com/article/a-playbook-for-knocking-down-higher-ed.

[30] Pelletier, Kathe, McCormack, Mark, Reeves, Jamie, Robert, Jenay, Arbino, Nichole, Al-Freih, Maha, Dickson-Deane, Camille, et al, "2022 EDUCAUSE Horizon Report, Teaching and Learning Edition," Boulder, CO: EDUCAUSE, 2022. https://library.educause.edu/resources/2022/4/2022-educause-horizon-report-teaching-and-learning-edition.

speech with hate speech,[31] turning campuses into politicized battlefields.[32] Nowhere is this more evident than when politically-motivated students on college campuses "engage with provocation and discuss speech rights in relation to diversity issues."[33] Students across the U.S. are also becoming more active in dialogues and demonstrations about racial and social justice issues such as labor, Black Lives Matter, and voters' rights.[34] In order to attract and serve an increasingly diverse student body, colleges and universities attempt to demonstrate support for diversity, equity, inclusion, and accessibility (DEIA) by adopting DEIA[35] recruiting statements and competency requirements for their administrators and faculty, but some critics claim such actions amount to "compelled speech" and violate academic freedom and the First Amendment.[36]

DEIA, Retention, and Virtue Signaling

Though colleges and universities in recent years have increasingly been signaling support for DEIA via their mission statements and efforts to recruit a diverse workforce, isolating and "tokenized" campus cultures continue to negatively impact retention.[37] When institutions acknowledge but fail to address systemic inequalities and white supremacy within their organizations, DEIA efforts may amount to virtue signaling and hand-waving (i.e., an insincere attempt at demonstrating solidarity with a social issue). DEIA work within higher education and specifically white workers and educators behind DEIA initiatives have come under scrutiny for self-proclaimed "expertise."[38] One statement "reject[s] the historical and increasing trend of white library, archives, and information workers and educators at all levels appropriating the

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[31] Kidder, Jeffrey L., and Amy J. Binder, "The Politics of Speech on Campus," *Sociological Forum* 36, no. 2 (June 2021): 338–58. https://doi.org/10.1111/socf.12681.

[32] Oleksiyenko, Anatoly V., and Liz Jackson, "Freedom of Speech, Freedom to Teach, Freedom to Learn: The Crisis of Higher Education in the Post-Truth Era," *Educational Philosophy and Theory* 53, no. 11 (September 19, 2021): 1057–62. https://doi.org/10.1080/00131857.2020.1773800.

[33] Kidder and Binder, "The Politics of Speech on Campus."

[34] Paterson, James, "Student Activism on the Rise," *NEA Today* (blog), March 9, 2021. https://www.nea.org/advocating-for-change/new-from-nea/student-activism-rise.

[35] We acknowledge there are many variations of acronyms including DEI, EDI, DEIA, etc. We have chosen one for editorial consistency.

[36] Trivedi, Isha, "More Colleges Are Adding Diversity to Tenure Standards. But the Debate's Not Settled," *The Chronicle of Higher Education*, August 12, 2022. https://www.chronicle.com/article/more-colleges-are-adding-diversity-to-tenure-standards-but-the-debates-not-settled.

[37] Kafka, Alexander C, "When Building a Diverse Leadership, Emphasize Culture, Not Quotas," *The Chronicle of Higher Education*, September 21, 2021. https://www.chronicle.com/report/free/emphasize-culture-not-quotas.

[38] Brown, Alexandria, Cheng, James, Espinal, Isabel, Fiedler, Brittany Paloma, Gabiola, Joyce, Leung, Sofia, Mody, Nisha, Moore, Alanna Aiko, Neely, Teresa Y., and Ossom-Williamson, Peace, "Statement Against White Appropriation of Black, Indigenous, and People of Color's Labor," WOC+Lib. Accessed September 11, 2022. https://www.wocandlib.org/features/2021/9/3/statement-against-white-appropriation-of-black-indigenous-and-people-of-colors-labor.

work and professionally profiting from the lived experiences of BIPOC [Black, Indigenous, and People of Color].”[39]

Despite historic and ongoing evidence of racial disparity in college admissions,[40] the Supreme Court is currently hearing “two cases challenging the constitutionality of race-conscious admission.”[41] There exists a real possibility that affirmative action will be declared unconstitutional in the near future.[42]

Anti-LGBTQIA2S+ Legislation

Over the past three years, there has been an upsurge in anti-trans rhetoric in the media,[43] reported cases of violence, and hostile legislation.[44] The 2022 UCLA Williams Institute’s “Educational Experiences of Transgender People” survey results “demonstrate that experiences of discrimination against transgender people are not unique to high school and also occur in higher education settings.”[45] Over a third of trans respondents “experienced bullying, harassment, or assault,” about 25% “said that lifetime adverse treatment…impacted their academic success,” and “more than half of transgender students” reported poor mental health during their time in higher education.[46] Although the recent *Dobbs* decision overturning *Roe v. Wade* has largely been discussed in terms of its impact on reproductive health, alongside organized efforts to criminalize youth access to gender-affirming care,[47] the decision brings into question the basic

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[39] Brown, Alexandria et al., “Statement Against White Appropriation.”

[40] Redden, Elizabeth, “Confronting Racism in Admissions,” Inside Higher Ed, October 26, 2020. https://www.insidehighered.com/admissions/article/2020/10/26/will-conversation-turn-action-when-it-comes-issues-racial-equity.

[41] Nadworny, Elissa, “Race in College Admissions Is Back in Front of the Supreme Court. Here’s What to Know,” *NPR*, October 29, 2022, sec. Education. https://www.npr.org/2022/10/29/1132449699/college-admissions-affirmative-action-supreme-court.

[42] Hoover, Eric, “Affirmative Action’s Big Win Always Had an Asterisk,” *The Chronicle of Higher Education*, September 2, 2022. https://www.chronicle.com/article/affirmative-actions-big-win-always-had-an-asterisk.

[43] Diaz, Jaclyn, “Florida’s Governor Signs Controversial Law Opponents Dubbed ‘Don’t Say Gay,’” *NPR*, March 28, 2022, sec. Efforts to restrict rights for LGBTQ youth. https://www.npr.org/2022/03/28/1089221657/dont-say-gay-florida-desantis.

[44] Human Rights Campaign, “As 2022 State Legislative Sessions Begin, A Review of 2021’s Record-Breaking Anti-LGBTQ+ Sessions,” Erie Gay News. Accessed December 9, 2022. https://www.eriegaynews.com/news/article.php?recordid=202202hrc2021legisreview.

[45] Conron, Kerith J., O’Neill, Kathryn K., and Vasquez, Luis A., “Educational Experiences of Transgender People: Findings from a National Probability Survey,” UCLA Williams Institute, April 2022. https://williamsinstitute.law.ucla.edu/publications/transgender-higher-ed/.

[46] Conron et al., “Educational Experiences of Transgender.”

[47] Freedom For All Americans, “Legislative Tracker: Anti-LGBTQ Bills Filed in the 2022 Legislative Session,” Freedom for All Americans. https://freedomforallamericans.org/legislative-tracker/anti-lgbtq-bills/.

rights people have over their own bodies[48] and further compounds the threat to decades of progress made by trans activists to receive gender-affirming healthcare. A 2021 poll conducted by The Trevor Project found that "two-thirds of LGBTQ youth [aged 13-24] report that recent debates about state laws restricting the rights of transgender people have negatively impacted their mental health," and additionally found that "the impact is even greater among trans and non-binary youth" (85%).[49]

Within 2022, at least six anti-LGBTQIA2S+ bills implicated colleges and universities.[50] According to Human Rights Campaign data, 13 out of the 23 states to introduce anti-LGBTQIA2S+ bills have signed bills into law.[51] These bills promote exclusionary K-12 practices[52] which "aim to fully disenfranchise trans people from public life beginning in childhood,"[53] threaten the use of inclusive practices across school districts with "endless litigation" and "financial costs,"[54] and "interrupt and mediate the college-going process for trans girls."[55] Many colleges and universities are well-positioned to "create policies to protect transgender students on campus,"[56] and there are opportunities to internally examine practices and policies to better support LGBTQIA2S+ students, staff, and faculty on campuses.

Critical Race Theory Bans

Critical race theory (CRT) has come under siege as a "divisive concept" in K-12 classrooms and has even been described as "state-sanctioned racism."[57] Within the past year, colleges, universities, and educators have increasingly been targeted for teaching CRT and adjacent topics. In 2022 alone, "46% of all educational gag orders…implicate higher education directly," with

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[48] Facci, AC, "Why We Use Inclusive Language to Talk About Abortion," *American Civil Liberties Union* (blog), June 29, 2022. https://www.aclu.org/news/reproductive-freedom/why-we-use-inclusive-language-to-talk-about-abortion.

[49] Gonzalez, Oriana, "Poll: Most LGBTQ Kids' Mental Health Negatively Impacted by Anti-Trans Legislation," Axios, January 10, 2022. https://www.axios.com/2022/01/10/mental-health-lgbtq-youth-anti-trans-bills.

[50] Freedom For All Americans, "Legislative Tracker."

[51] Human Rights Campaign, "Anti-LGBTQ+ Bills in 2022."

[52] Georgetown University Office of Advancement, "Anti-LGBTQ+ State Laws Will Have an Impact on Higher Ed, Experts Say," *THE FEED* (blog), March 17, 2022. https://feed.georgetown.edu/access-affordability/anti-lgbtq-state-laws-will-have-an-impact-on-higher-ed-experts-say/.

[53] Gill-Peterson, Jules, "Anti-Trans Laws Aren't Symbolic. They Seek to Erase Us From Public Life," Them, April 18, 2022. https://www.them.us/story/anti-trans-laws-public-erasure-dont-say-gay.

[54] Gill-Peterson, "Anti-Trans Laws."

[55] Georgetown University Office of Advancement. "Anti-LGBTQ+ State Laws."

[56] Brink, Meghan, "Federal Judge Blocks Title IX Guidance on Transgender Students," Inside Higher Ed, July 19, 2022. https://www.insidehighered.com/news/2022/07/19/federal-judge-blocks-ed-dept-title-ix-guidance-trans-students.

[57] Flaherty, Colleen, "An 'Oasis' From What?," Inside Higher Ed, March 1, 2022. https://www.insidehighered.com/news/2022/03/01/grove-city-college-facing-backlash-diversity-work.

violations resulting anywhere from restricting public schools and some colleges "from hiring anyone who teaches [CRT] in any context" to "loss of access to state funding" entirely.[58] The CRT Forward Tracking Project reports there have been "about 100 instances where states, countries, or the federal government tried to limit or eliminate CRT from college classrooms," with data showing that every state except for Delaware has "anti-CRT measures implemented at some level."[59] However, as argued by CRT Forward Tracking Project's director Taifha N. Alexander, these efforts intentionally mischaracterize CRT in order to "ensure that the nation can't realize its full potential as a multiracial democracy."[60] Further, opponents that view America as a "colorblind" or "post-racial" society may conclude that CRT is antithetical to progress,[61] ignoring the reality that systems of oppression continue to exist. Pushback on topics covered within CRT, critical theory in general, intersectionality theory, and queer theory elicit a slew of questions for the future of higher education and the implications for academic libraries, such as "whose history" is taught, "who gets to make these decisions," and "how critical" educators and librarians can be.[62]

Civic Discourse

These developments pose a threat to academic freedom within higher education and contribute to the further decline of civic discourse. To counter the increasing polarization and politicization, groups within and outside of higher education have undertaken various efforts to create more productive and less polarizing civic discourse through community-building and other strategies. These efforts describe work within institutions and between institutions and the general public. In the book *Generous Thinking*, Dr. Kathleen Fitzpatrick, Director of Digital Humanities at Michigan State University, argues for academicians to think more constructively than competitively–to cultivate listening over speaking and community over competition.[63] Civic Switchboard, an IMLS-supported effort, aims to "further democratize data" and support "equitable access to information" by hosting open discussions, writing on topics like civic data partnerships, and pursuing other initiatives.[64] The Constructive Dialog Institute, a non-profit

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[58] Young, Jeremy and Friedman, Jonathan, "In Higher Education, New Educational Gag Orders Would Exert Unprecedented Control Over College Teaching," *PEN America* (blog), February 1, 2022. https://pen.org/in-higher-education-new-educational-gag-orders/.

[59] Goodman, Sylvia, "Researchers Did a Deep Dive Into Efforts to Restrict Critical Race Theory. Here's What They Found," *The Chronicle of Higher Education*, August 3, 2022. https://www.chronicle.com/article/researchers-did-a-deep-dive-into-efforts-to-restrict-critical-race-theory-heres-what-they-found.

[60] Goodman, "Researchers Did a Deep Dive."

[61] Sprunt, Barbara, "The Brewing Political Battle Over Critical Race Theory," *NPR*, June 29, 2021, sec. Politics. https://www.npr.org/2021/06/02/1001055828/the-brewing-political-battle-over-critical-race-theory.

[62] Angulo, AJ, and Jack Schneider, "Between Recent Political Controversies and Long-Standing Education Histories," *History of Education Quarterly* 62, 2 (2022): 133–35. https://doi.org/10.1017/heq.2022.1.

[63] Fitzpatrick, Kathleen, *Generous Thinking: A Radical Approach to Saving the University*, Baltimore: Johns Hopkins University Press, 2019.

[64] Civic Switchboard, "Civic Switchboard," 2022. https://civic-switchboard.github.io.

organization founded in 2017, publishes open access studies and reports on topics related to cultivating intellectual humility, reducing polarization, and fostering constructive responses to conflict. For example, one report examined an online learning program's ability "to foster openness to diverse perspectives and equip students with evidence-based practices for engaging in dialogue across differences."[65]

Implications

- Academic libraries have the opportunity and ability to advocate for intellectual freedom, improve civic discourse, and foster constructive dialogue across differences–all of which could have direct and real consequences for democracy.
- Library administrators should work with campus administrators in developing and enacting policy that is both socially responsible and supportive of academic freedom.
- Academic libraries should increase awareness of social justice issues through programming and outreach with campus and community stakeholders.
- Library administrators should ensure when developing and implementing inclusive policies that they are considerate of multiple vectors of identity and axes of oppression.
- Librarians should critically examine current institutional commitment to practices and policies that support LGBTQIA2S+ and BIPOC students, faculty, and staff beyond one-shot internal DEIA workshops or trainings.

Teaching & Learning

Pedagogy

Mirroring a broader trend in higher education, library pedagogies have also been evolving toward inclusive practices, evidence-based teaching, and critical discourses.[66] Recent examples of this trend in library information literacy include using critical discourse analysis to modify the language in library orientation sessions toward greater inclusivity,[67] using a culturally-responsive

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[65] Duong, Mylien, Welker, Keith, and Mehl, Caroline, "Turning Down the Heat on Campus: How an Online Educational Program Can Reduce Polarization and Improve Dialogue in College Classrooms," New York: Constructive Dialogue Institute, August 10, 2022. https://constructivedialogue.org/articles/turning-down-the-heat-on-campus.

[66] Davis, Tangier, and Aireale J. Rodgers, "Can Evidence-Based Teaching Techniques Address the Education Debt That Students of Color Are Owed?," Ithaka S+R, May 16, 2022. https://sr.ithaka.org/publications/can-evidence-based-teaching-techniques-address-the-education-debt-that-students-of-color-are-owed/.

[67] Dandar, Devina, and Lacey, Sajni, "Critical Discourse Analysis as a Reflection Tool for Information Literacy Instruction," *Journal of Information Literacy* 15, no. 1 (January 11, 2021): 3. https://doi.org/10.11645/15.1.2826.

teaching pedagogy to investigate teaching practices and develop new models,[68] an entire special issue of *College & Research Libraries* dedicated toward critical reflection on the library one-shot instruction session,[69] and efforts to understand and recognize the first year student populations that often participate in library instruction.[70]

Another continuing trend in library pedagogy has been an effort to extend and innovate on ACRL's *Framework for Information Literacy for Higher Education.*[71] Recent publications highlight librarian efforts to teach and assess the framework effectively online including the use of flipped classroom models[72] and examination of librarian roles in instruction during the pandemic.[73]

Focusing Assessment Efforts on Student Success

Assessment toward demonstrating the value and impact of services is not a new phenomenon in libraries. This trend has been in progress for well over a decade and efforts in this area contributed to the publication of the ACRL's Value of Academic Libraries Report.[74] However, recent cultural and technological shifts have pushed assessment efforts in a student-centered direction with a more holistic approach to data collection. A recent EDUCAUSE trends report explores the cultural transformation in post-pandemic higher education toward a focus on the student experience.[75] This transformation is developing alongside a trend toward increasing

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[68] Cowden, Chapel, Priscilla Seaman, Sarah Copeland, and Lu Gao, "Teaching with Intent: Applying Culturally Responsive Teaching to Library Instruction," *Portal: Libraries and the Academy* 21, no. 2 (2021): 231–51. https://doi.org/10.1353/pla.2021.0014.

[69] For one example of an article in this special issue, see Pho et al., "You Only Get One Shot."

[70] LeMire, Sarah, Stephanie J. Graves, Sarah Bankston, and Jennifer Wilhelm, "Similarly Different: Finding the Nuances in First Year Students' Library Perceptions," *The Journal of Academic Librarianship* 47, no. 4 (July 2021): 102352. https://doi.org/10.1016/j.acalib.2021.102352.

[71] Hsieh, Ma Lei, Patricia H. Dawson, and Sharon Q. Yang, "The ACRL Framework Successes and Challenges since 2016: A Survey," *The Journal of Academic Librarianship* 47, no. 2 (March 2021): 102306. https://doi.org/10.1016/j.acalib.2020.102306.

[72] Humrickhouse, Elizabeth, "Flipped Classroom Pedagogy in an Online Learning Environment: A Self-Regulated Introduction to Information Literacy Threshold Concepts," *The Journal of Academic Librarianship* 47, no. 2 (March 2021): 102327. https://doi.org/10.1016/j.acalib.2021.102327.

[73] Gross, Melissa, Heidi Julien, and Don Latham, "Librarian Views of the ACRL Framework and the Impact of Covid-19 on Information Literacy Instruction in Community Colleges," *Library & Information Science Research* 44, no. 2 (April 2022): 101151. https://doi.org/10.1016/j.lisr.2022.101151.

[74] Oakleaf, Megan J., *The Value of Academic Libraries: A Comprehensive Research Review and Report,* Chicago, IL: Association of College and Research Libraries, American Library Association, 2010. https://www.ala.org/acrl/sites/ala.org.acrl/files/content/issues/value/val_report.pdf.

[75] O'Brien, John, "Higher Education in Motion: The Digital and Cultural Transformations Ahead," EDUCAUSE, October 18, 2022. https://er.educause.edu/articles/2022/10/higher-education-in-motion-the-digital-and-cultural-transformations-ahead.

accessibility of institution-level data and breaking down data silos within institutions.[76] The convergence of these trends has led to a wave of recent studies that tie library services, particularly instruction, to student success in powerful ways. These include studies of the impact of library instruction,[77] library use,[78] and credit-bearing information literacy courses.[79] However, this increased focus on quantitative indicators and move toward online learning in the pandemic has also drawn scrutiny that the results are not impactful enough to justify the attendant student privacy concerns.[80] These concerns are also discussed in the higher education data and learning analytics sections of this report.

Implications

- Instruction librarians have many ways to update information literacy pedagogical practices and assessments using critical discourses and theories or through the lenses of diversity, equity, inclusion, and accessibility.
- Libraries may have more opportunities to explore student success initiatives in novel ways–using qualitative and quantitative methods to investigate the relationships between library resources and instructional sessions and various dimensions of student academic achievement and success. There may also be an increased expectation at the institutional level that library assessment will draw from institutional data sources.
- As institutions continue to develop student success initiatives, academic libraries will need to identify how their resources, services, and programming support and further such strategic institutional efforts.

Enduring Influence of COVID

Even as COVID-19 begins to shift from being a pandemic to an endemic status, the changes wrought by the pandemic on services, facilities, and staffing are showing longevity. Like other

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[76] Reeves, Jamie, and Mark McCormack, "2022 Higher Education Trend Watch." EDUCAUSE, November 1, 2021. https://www.educause.edu/ecar/research-publications/higher-education-trend-watch/2022.

[77] Rowe, Jennifer, Julie Leuzinger, Carol Hargis, and Karen Harker, "The Impact of Library Instruction on Undergraduate Student Success: A Four-Year Study," *College & Research Libraries* 82, no. 1 (2021): 7. https://doi.org/10.5860/crl.82.1.7.

[78] Mayer, Jennifer, Rachel Dineen, Angela Rockwell, and Jayne Blodgett, "Undergraduate Student Success and Library Use: A Multimethod Approach," *College & Research Libraries* 81, no. 3 (2020). https://doi.org/10.5860/crl.81.3.378.

[79] Jones, Wilma L., and Tara Mastrorilli, "Assessing the Impact of an Information Literacy Course on Students' Academic Achievement: A Mixed-Methods Study," *Evidence Based Library and Information Practice* 17, no. 2 (June 15, 2022): 61–87. https://doi.org/10.18438/eblip30090.

[80] Robertshaw, M. Brooke, and Andrew Asher, "Unethical Numbers? A Meta-Analysis of Library Learning Analytics Studies," *Library Trends* 68, no. 1 (2019): 76–101. https://doi.org/10.1353/lib.2019.0031.

aspects of society, higher education institutions and libraries are finding themselves adjusting to shifts in opinions and practices that will outlast the pandemic itself.

Facilities

As COVID-based restrictions eased throughout late 2021, and library users and staff began to return to their campus locations, pre-pandemic routines and in-person services have been re-examined and modified. Whether related to internal management or user engagement, key methods of service delivery and information access have remained more firmly entrenched in the online arena. As researchers have begun studying the impact of the pandemic, some important themes affecting physical spaces have been emerging.[81]

Most importantly, COVID brought into sharper relief the connections–and disjunctions–between physical and online services as well as the disparities between well-resourced and less-resourced institutions. One recent assessment comparing the pre-pandemic and post-pandemic use of digital resources at three academic institutions found that digital services were not so much "increased" during the pandemic, but rather the inaccessibility of physical services placed much more emphasis and stress on existing digital services.[82] At the same time, libraries noticeably altered their own staff management and communication methods, with stronger internal communication technologies and platforms being implemented by institutions. However, the rapid implementation of these changes in response to the pandemic have been documented as key stressors on staff and users.[83] Looking forward, the pandemic has also prompted conversations about preparing for future pandemics and similar disruptions and fully integrating updated procedures into overall library operations.[84]

How existing physical spaces can best support these evolving user needs and service models will be a central concern for the next decade of facility planning and usage. A few trends appear to be shaping those conversations.

First, the deeper integration of digital services and databases will continue to re-shape library reliance on centralized, in-person settings as more service options remain permanently online or

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[81] Ashiq, Murtaza, Farhat Jabeen, and Khalid Mahmood, "Transformation of Libraries during Covid-19 Pandemic: A Systematic Review," *The Journal of Academic Librarianship* 48, no. 4 (July 2022): 102534. https://doi.org/10.1016/j.acalib.2022.102534.

[82] Connell, Ruth Sara, Lisa Wallis, and David Comeaux, "The Impact of COVID-19 on the Use of Academic Library Resources," *Information Technology and Libraries* 40, no. 2 (June 15, 2021). https://doi.org/10.6017/ital.v40i2.12629.

[83] Ashiq, Jabeen, and Mahmood, "Transformation of Libraries during Covid-19 Pandemic," Table 3.

[84] Burgos Aguilar, Jose Vladimir, "Covid-19 Showed That the Academic Library Requires Digital Evolution," *Times Higher Education*, March 8, 2022. https://www.timeshighereducation.com/campus/covid19-showed-academic-library-requires-digital-evolution.

become embedded in locations external to a centralized facility.[85] Similar to commercial workplaces, libraries will likely be asked to even more rigorously assess how their spaces are actually being utilized going forward,[86] to determine the "right size" for these needs, and to continue experimenting more with layouts and space configurations to support a diversity of acoustical, privacy, and technology needs.[87] Allowing end users to reconfigure spaces, whether to create more quiet zones to ensure "visual and acoustic privacy" or more spontaneous small group study sessions with moveable whiteboards continues to be a driving concern.[88] These changes could be supported by design techniques such as increased use of demountable partitions instead of permanent interior walls and more widely distributed power and IT infrastructures throughout common spaces.

Second, institutions will continue to examine their services from a resiliency perspective. Strengthening online capacity will be complemented by modifying facilities to provide core services on-site even if user and staff capacity are significantly reduced. Projects that are in the capital planning or design stages are looking at how to accommodate not only potential future health emergencies but also increasingly extreme weather events, water shortages, and other potential disruptions. Facilities will also be asked to more carefully consider the institution's overall digital footprint and help provide a more integrated experience of both.[89]

Space and use allocations are being more closely scrutinized, forcing architects, staff, administrators, and users to consider what is essential and look for ways to reclaim space for other uses.[90] At the University of Missouri, for example, the administration is looking to reduce its general building space by 20% through demolition or divestment by 2024. The key drivers for this trend are reduced long-term operations and maintenance (O+M) costs as well as increased

[85] Murdoch, Blake, "Privacy and Artificial Intelligence: Challenges for Protecting Health Information in a New Era," *BMC Medical Ethics* 22, no. 1 (December 2021): 122. https://doi.org/10.1186/s12910-021-00687-3.

[86] Barrero, Jose Maria, Nicholas Bloom, and Steven J. Davis, "Why Companies Aren't Cutting Back on Office Space," *Harvard Business Review*, January 25, 2022. https://hbr.org/2022/01/why-companies-arent-cutting-back-on-office-space.

[87] Kim, Daejin, Sheila Bosch, and Jae Hwa Lee, "Alone with Others: Understanding Physical Environmental Needs of Students within an Academic Library Setting," *The Journal of Academic Librarianship* 46, no. 2 (March 2020): 102098. https://doi.org/10.1016/j.acalib.2019.102098.

[88] DeFrain, Erica, Jennifer Thoegersen, and Miyoung Hong, "Standing Out or Blending In: Academic Libraries in the Crowded Informal Learning Space Ecosystem," *College & Research Libraries* 83, no. 1 (2022). https://doi.org/10.5860/crl.83.1.45.

[89] Oketch, Linet, and Peter Wamae, "Disaster Preparedness and Planning for Service Sustainability: Case of Egerton University Digital Library, Main Campus," *International Journal of Current Aspects* 5, no. 3 (October 23, 2021): 54–82. https://doi.org/10.35942/ijcab.v5i3.198.

[90] Wesel, Lisa. "Unassigned Space at Colleges and Universities," Tradeline, August 18, 2021. https://www.tradelineinc.com/reports/2021-8/unassigned-space-colleges-and-universities.

efficiency of all campus facilities.[91] One outcome from their effort has been an increase in their efficiency evaluations from triennially to yearly, as well as a shift of some portion of O+M costs onto individual academic and support units like the libraries.[92]

With the move to a more digitally driven footprint, libraries are also more frequently evaluating the extents of their physical and digital collections, making increasingly difficult decisions about what and how much to support. Rising long-term operating costs for access to digital assets are leading some institutions to leverage interlibrary loan (ILL) and similar arrangements to help provide content without increasing their physical or financial footprints.[93] Within their facilities, libraries continue to host more specialized programs, collections, and services as well as an increasing number of "partnering" arrangements that co-locate other campus services inside the physical library space. Richard Jones, an architect based in Salem, MA, notes these arrangements are not new but their recent emphasis can be attributed in part to the "…perception that libraries 'don't need books' and in part to the library looking to increase foot traffic and vitality to ensure future viability."[94]

Helping fuel this focus on space utilization and partnerships on the capital planning side, high levels of inflation continue to impact projects currently in planning, design, and construction as we head into 2023. From the Association of General Contractors (AGC), construction-related inflation appears to be continuing to rise and is not forecast to return to more historical norms even into 2024. According to the AGC, these increases are not only being driven by material price increases but also by increasing shortages in labor markets, especially for specific trade contractors.[95]

Trying to balance all of these trends and concerns raises numerous questions for further consideration: What centralized, in-person resources are indispensable and what can be migrated fully online or more distributed physically throughout a campus? What kinds of technology gaps and digital divides among users are exposed by an increasing reliance on digital resources and services? How do institutions balance the need for appropriate physical space in an era of high

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[91] Manning, Steve, "Why Mizzou Is Cutting One Million Square Feet of Space," Higher Ed Facilities Forum, February 23, 2022. https://info.higheredfacilitiesforum.com/blog/why-mizzou-is-cutting-one-million-square-feet-of-space.

[92] Manning, "Why Mizzou."

[93] Aguilar and Vladimir, "Covid-19 Showed That the Academic Library."

[94] Interview by Gregory Walker with Richard Jones, Founding Principal for Jones Architecture, Salem, MA.

[95] Associated General Contractors of America, "Construction Materials Costs Rise 10.1 Percent Between November 2021 And November 2022 With Double-Digit Increases In Numerous Building Products," AGC. Accessed January 17, 2023. https://www.agc.org/news/2022/12/09/construction-materials-costs-rise-101-percent-between-november-2021-and-november-2022-double-digit.

inflationary pricing, while not becoming too reliant on digital assets over which there is less long-term financial control?

Staffing

The staffing landscape in today's academic libraries continues to evolve as COVID, budget restraints, work-life balance, remote and hybrid work opportunities (or lack thereof), toxic work environments, and job satisfaction issues affect those who are currently working or considering working in libraries. While some of these issues are not new to the profession, the response to them from leaders, managers, and employees is changing.

One of the more notable issues being discussed is staff burnout resulting from overwork and inadequate resources to do their best work. "The Great Resignation," a term coined by Anthony Klotz to describe the millions of people in the U.S. who quit their jobs since the start of the pandemic,[96] became a reality for many libraries to face. Some librarians moved on while others stayed and had to take on increased workloads.[97] This has led to "quiet quitting," another new workplace term that became popular in library blogs and social media circles. An alternative to resignation, quiet quitting involves opting out of tasks beyond one's assigned duties and/or becoming less psychologically invested in work. Primary work responsibilities continue to be accomplished, but there is less willingness to engage in activities that require staying late, showing up early, or attending non-mandatory meetings.[98]

As libraries looked to fill vacancies, many used this opportunity to redefine roles and recruit new job titles. Dankowski identified five emerging roles: sustainability librarian, user experience librarian, director of equity, diversity, and inclusion, open educational resources librarian, and data visualization librarian.[99] These new roles reflect a greater emphasis on student needs and awareness of shifts in both institutional and societal culture.

The question of flexible work arrangements (FWA) has taken center stage in many academic libraries; onsite, remote, and hybrid options are being more frequently discussed by managers and requested by staff. These arrangements prompt questions about their impact on job satisfaction, recruitment and retention, performance and achievement, engagement, visibility,

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[96] Cohen, Arianne, "How to Quit Your Job in the Great Post-Pandemic Resignation Boom," *Bloomberg.Com*, May 10, 2021. https://www.bloomberg.com/news/articles/2021-05-10/quit-your-job-how-to-resign-after-covid-pandemic.

[97] Ewen, Lara, "Quitting Time," *American Libraries*, June 1, 2022. https://americanlibrariesmagazine.org/2022/06/01/quitting-time/.

[98] Klotz, Anthony C., and Mark C. Bolino, "When Quiet Quitting Is Worse Than the Real Thing," *Harvard Business Review*, September 15, 2022. https://hbr.org/2022/09/when-quiet-quitting-is-worse-than-the-real-thing.

[99] Dankowski, Terra, "5 Library Jobs on the Rise," *American Libraries*, June 1, 2022. https://americanlibrariesmagazine.org/2022/06/01/5-library-jobs-on-the-rise/.

and the use of library space, and research continues in these areas. At the same time, FWA have brought inequities among staff to the forefront–different employees may have more or less access to these arrangements based on their job responsibilities and the extent of their computer and internet access at home.[100]

As library employees think about their futures and examine the pros and cons of librarianship as a profession, they are comparing salaries, benefits, flexible work arrangements, growth opportunities, work environment, and culture. As staff question whether they want to remain in libraries, leaders and managers are challenged to ensure that library culture reflects their mission, values, and priorities, and to assess how FWA are impacting that culture. Employers can provide staff with the necessary equipment to work remotely, but if they fail to engage staff, communicate value, and recognize contributions, employees will not be invested in the institution's long-term success.[101]

Implications

- Academic libraries will need to assess their space needs and consider repurposing library space in light of reduced in-person services, enhanced digital services, increased need for flexible user spaces, and expanded use of remote and hybrid work options.
- Library staff are embracing concepts like flexible work arrangements and work-life balance when seeking employment opportunities. Library administrators will need to focus on workplace culture to align it with library and staff values, improve inclusion and belonging, address workload and morale issues, and offer opportunities for growth and advancement to attract and retain employees.

Scholarly Communication

Open Data and Data Maximization

Scholarly communications have seen changes related to shifts in values and a focus on remote work brought on by the pandemic, as other areas have. While the speed of these shifts has been unprecedented, scholars and distributors both have worked to cope and have adapted somewhat

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[100] Hosoi, Mihoko, Lauren Reiter, and Diane Zabel, "Reshaping Perspectives on Flexible Work: The Impact of COVID-19 on Academic Library Management," *Portal: Libraries and the Academy* 21, no. 4 (2021): 695–713. https://doi.org/10.1353/pla.2021.0038.

[101] Pottelsberghe, Brian van, "The Timely Purpose and Benefit in Reinforcing Institutional Culture among Hybrid and Onsite Library Team Members," *Legal Reference Services Quarterly* 41, no. 1 (January 2, 2022): 48–50. https://doi.org/10.1080/0270319X.2022.2082810.

successfully to new hybrid conferences, data sharing precedents, and university-wide financial stressors.[102]

While preprint servers (which contain scholarly works not yet published or peer-reviewed) are likely to continue growing, in part due to the pandemic consequence of slower than usual peer review,[103] the National Institutes of Health (NIH) also made waves with its new requirements for the submission of a Data Management and Sharing Plan (DMS) with funding applications in order to maximize data sharing.[104] Widespread data sharing related to COVID-19 research during the pandemic played a crucial role in vaccine creation,[105] highlighting the value of such a policy and the importance of connection and collaboration within academic and scientific research.

Previously, the NIH requirements only applied to applications with $500,000 or more in costs per year; this new policy will expand the data covered by the requirements. Furthermore, it will support researchers in their thinking and planning related to the many complex facets of managing clinical and other research data.[106] This move marks a broader trend, as numerous publishers provide guidelines for data sharing for submitted articles, or require data availability statements, which allow readers easier access to accompanying data if not included as supplemental material.[107]

Similarly aiming to maximize public access to both publications and research data, the White House Office of Science and Technology Policy (OSTP) released a memo in August 2022 providing guidance to federal agencies that fund research and development. Commonly referred to as the "Nelson Memo,"[108] it specifically recommends that all federal agencies update their public access policies in order to ensure that 1) all publications and supporting data produced by

[102] Nicholas et al., "Early Career Researchers in the Pandemic-Fashioned 'New Scholarly Normality,'"; Jorgenson, Wolinetz,and Collins, "Incentivizing a New Culture of Data Stewardship: The NIH Policy for Data Management and Sharing."

[103] Nicholas, Dave, Eti Herman, Cherifa Boukacem-Zeghmouri, Antony Watkinson, David Sims, Blanca Rodríguez-Bravo, Marzena Świgoń, et al., "Early Career Researchers in the Pandemic-Fashioned 'New Scholarly Normality': A First Look into the Big Changes and Long-Lasting Impacts (International Analysis)," *El Profesional de La Información* 31, no. 4 (July 2022): 1–21. https://doi.org/10.3145/epi.2022.jul.18.

[104] Gonzales, Sara, Matthew B. Carson, and Kristi Holmes, "Ten Simple Rules for Maximizing the Recommendations of the NIH Data Management and Sharing Plan," Edited by Scott Markel. *PLOS Computational Biology* 18, no. 8 (August 3, 2022): e1010397. https://doi.org/10.1371/journal.pcbi.1010397.

[105] Jorgenson, Lyric A., Carrie D. Wolinetz, and Francis S. Collins, "Incentivizing a New Culture of Data Stewardship: The NIH Policy for Data Management and Sharing," *JAMA* 326, no. 22 (December 14, 2021): 2259–60. https://doi.org/10.1001/jama.2021.20489.

[106] Gonzales et al., "Ten Simple."

[107] Gonzales et al., "Ten Simple."

[108] Tavernier, Willa Liburd, "The Nelson Memo: Public Access to Research and What This Means for Researchers | IUB Libraries Blogs," 2022. https://blogs.libraries.indiana.edu/scholcomm/2022/09/20/the-nelson-memo-public-access-to-research-and-what-this-means-for-researchers/.

their institution be able to be accessible for free public access "without an embargo," 2) that they establish "transparent procedures" to ensure the integrity of the research through public access policy, and 3) that "equitable delivery of federally funded research results and data" is coordinated with the OSTP.[109]

While greater public accessibility and more thoughtful and sustainable data management practices are positive movements for scholarly communications on the surface, researchers have cited a variety of obstacles to the new policies. Issues include concerns with inadequate repository infrastructure, battling pre-held beliefs regarding data ownership and access, and the time commitment required for responsible application.[110] Academic librarians will certainly be called upon in instances where researchers need assistance in planning, creating, and housing data management plans and data in the near future, and should be prepared to offer support and aid where appropriate.

New Roles and Tools

Scholars are requiring more support from librarians in new stages of their research process, in addition to still needing librarians to fill traditional roles such as locating and selecting source material. Michalak and Rysavy found that supports for researchers' workflows was a top need on campus,[111] and Gonzales et al. noted that librarians are more frequently providing the skills and services to support research throughout the entire lifecycle of a project, including data preparation, cleaning, and preservation.[112] Consistent advancement of technological tools have also allowed librarians to take on new responsibilities and have also presented new opportunities for open access publishing and institutional repository improvements.[113] Librarians' parts in the wave of post-pandemic publishing have also been seen outside of academic circles, as some campuses such as the University of Washington have chosen to focus on bridging the gap between academia and the public by hosting community-engaged public events in collaboration with scholarly communication departments, subject liaisons, and commons spaces.[114]

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[109] The White House, "OSTP Issues Guidance to Make Federally Funded Research Freely Available Without Delay | OSTP," Accessed February 2, 2023. https://www.whitehouse.gov/ostp/news-updates/2022/08/25/ostp-issues-guidance-to-make-federally-funded-research-freely-available-without-delay/.

[110] Jorgenson et al., "Incentivizing a New Culture."

[111] Rysavy, Monica D. T., and Russell Michalak, "Supporting Library Users' Research Workflows with EdTech Tools," *Journal of Library Administration* 62, no. 5 (July 4, 2022): 689–98. https://doi.org/10.1080/01930826.2022.2083444.

[112] Gonzales et al., "Ten Simple."

[113] Kern, Verletta, "Going Public: Library Support for Knowledge Translation and Mobilization for the Public Good," *Journal of Library Administration* 62, no. 3 (April 3, 2022): 312–33. https://doi.org/10.1080/01930826.2022.2043689.

[114] Kern, "Going Public."

However, the new opportunities and experiences that technology has provided library workers and scholarly communications in general are not without issues in maintaining and sustaining such tools. Through various analyses, one study found a significant lack of consistency in DOI resolutions, noting that their findings "provide strong indicators that scholarly content providers reply to DOI requests differently."[115] As DOIs have increasingly become the standard for online identifiers within scholarly citations, more investigation is needed into the absence of consistency and the required maintenance to make DOIs as persistent and sustainable as possible.

Implications

- To meet increasing demands to share data, librarians have tremendous opportunities to advance research through the creation and integration of workflow support, data management tools, technical infrastructure, and social events to foster collaborations between different scholarly communities.
- Success in this area for libraries will depend on addressing many issues including: developing and maintaining repository architecture, supporting long-term preservation of and access to research data, and streamlining data management workflows for researchers.

Library Collections

Collection development and management continues to rapidly evolve. Academic libraries have recently witnessed an accelerated shift to digital spaces and services during the pandemic, an increased focus on diversity, equity, and inclusion in library collections, continued interest and experiments in controlled digital lending, and expanded shared print programs. As we pursue these opportunities and tackle challenges, libraries will need to strike an appropriate balance as "Key values of access, ownership, and preservation must be pragmatically managed within the boundaries of space, budgets, and licenses."[116]

Accelerated Shift to eBooks & Digital Collections

In response to the COVID-19 pandemic, many academic libraries shifted their collecting strategies to focus on eBooks and digital collections in order to support remote learning. While libraries had already been steadily increasing the share of eBooks that they were purchasing, the

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[115] Klein, Martin, and Lyudmila Balakireva, "An Extended Analysis of the Persistence of Persistent Identifiers of the Scholarly Web," *International Journal on Digital Libraries* 23, no. 1 (March 1, 2022): 5–17. https://doi.org/10.1007/s00799-021-00315-w.

[116] Geuther, Christina, Casey D. Hoeve, and Faye O'Reilly, "Trends in Content Development and Licensing of Electronic Resources," *Journal of Electronic Resources Librarianship* 33, no. 1 (January 2, 2021): 1–12. https://doi.org/10.1080/1941126X.2021.1871195.

pandemic resulted in a more dramatic shift–eBook purchases grew from 54% of monograph acquisitions in FY20 to 69% in FY21.[117] Many more libraries set their approval profiles to e-preferred, and there was increased use of evidence-based acquisition (EBA) and demand-drive acquisition (DDA) models. These trends are expected to continue.

In a recent survey of academic library staff, strong majorities reported that they expect e-resources acquisitions to continue increasing, special collections acquisitions to remain the same, and print acquisitions to continue declining.[118] While this shift expanded access while libraries were closed and students were studying remotely, some librarians and researchers did not agree with this strategy and raised important concerns. The Seminar of the Acquisition of Latin American Library Materials (SALALM) issued a resolution noting the impact of e-preferred policies on international collections and urging libraries to continue purchasing print books to support regional diversity in collections.[119] Other organizations related to area studies endorsed the SALALM statement or crafted similar statements of their own. Other authors have noted concerns that EBA and DDA models could also have a negative impact on collecting diverse perspectives and voices.[120]

As the digital shift accelerates, librarians with collection development and licensing duties need to assess many factors beyond the quality and relevance of the content including the availability of MARC records and usage statistics, purchase and access models, provisions for perpetual access, accessibility issues, and preservation mechanisms.[121] As libraries and research methods evolve, licenses increasingly require language related to "text and data mining; Voluntary Product Accessibility Tests (VPATs); accessibility; confidentiality of user data; and standards for usage statistics including COUNTER and SUSHI" as well as "precautionary language for libraries facing budget constraints."[122]

[117] Elwell, Jon T., and Ashley Fast, "Library Analytics: Shaping the Future—COVID-19 One Year Later: Trends in Library Book Acquisitions," *Against the Grain* 33, no. 3 (2021): 56–57.

[118] Green, Ashlea, "Post Covid-19: Expectations for Academic Library Collections, Remote Work, and Resource Description and Discovery Staffing," *The Journal of Academic Librarianship* 48, no. 4 (July 2022): 102564. https://doi.org/10.1016/j.acalib.2022.102564.

[119] Seminar for the Acquisition of Latin American Library Materials (SALALM), "SALALM Resolution: Collection Development in the Time of Covid-19," SALALM, June 11, 2020. https://salalm.org/salalm-collections-covid.

[120] Blume, Rachel, "Balance in Demand Driven Acquisitions: The Importance of Mindfulness and Moderation When Utilizing Just in Time Collection Development," *Collection Management* 44, no. 2–4 (July 3, 2019): 105–16. https://doi.org/10.1080/01462679.2019.1593908.

[121] Geuther et al., "Trends in Content Development."

[122] Geuther et al., "Trends in Content Development," 2-3.

Diversity Audits

Academic libraries have recognized the need to better incorporate and highlight the voices of BIPOC and LGBTQIA2S+ communities within their collections. Collections staff have begun deeper discussions of strategies for assessing their collections and improving their collecting processes through the lens of diversity, equity, inclusion, and accessibility. One strategy that has emerged is the diversity audit. While diversity audits of library collections have a longer history in public and school libraries, they are a relatively new phenomenon in academic libraries.

Academic libraries can conduct diversity audits using a few different methodologies: comparing their collections and peer institution collections to diversity literary awards lists, using selected subject headings to conduct peer comparisons for benchmarking, and assessing a subset of the collection for author diversity in gender, sexuality, race, ethnicity, or other characteristics.[123] As emphasized by Emerson and Lehman, it is important to rely on author self-identification or reliable secondary sources to determine these characteristics–making such determinations based on one's own judgment would be highly problematic. For accountability, these must not be one-time projects. As Proctor notes, "Assessing the collection for content relating to under-represented groups should not be a one-time effort. Building and shaping library collections require ongoing, evolving assessments."[124] Auditing new acquisitions each year can provide both a smaller project for getting started and an opportunity to track progress on a library's efforts to expand representation within their collections over time. Emerson & Lehman suggest recording this data when cataloging new items to make data collection each year more efficient.[125]

Controlled Digital Lending

Operating under a legal framework outlined in *A White Paper on Controlled Digital Lending of Library Books*,[126] controlled digital lending (CDL) enables libraries to loan digital copies of books to patrons in ways that are designed to leverage first sale and fair use rights while respecting copyright. Lending practices are designed to control access to the content and include the following requirements: "owned-to-loaned ratios are maintained, physical items are sequestered, specific time limits are placed on loans through the use of resource management

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[123] Kristick, Laurel, "Diversity Literary Awards: A Tool for Assessing an Academic Library's Collection," *Collection Management* 45, no. 2 (April 2, 2020): 151–61. https://doi.org/10.1080/01462679.2019.1675209.

[124] Proctor, Julia, "Representation in the Collection: Assessing Coverage of LGBTQ Content in an Academic Library Collection," *Collection Management* 45, no. 3 (July 2, 2020): 233. https://doi.org/10.1080/01462679.2019.1708835.

[125] Emerson, María Evelia, and Lauryn Grace Lehman, "Who Are We Missing? Conducting a Diversity Audit in a Liberal Arts College Library," *The Journal of Academic Librarianship* 48, no. 3 (May 1, 2022): 102517. https://doi.org/10.1016/j.acalib.2022.102517.

[126] Hansen, David R., and Kyle K. Courtney, "A White Paper on Controlled Digital Lending of Library Books," Preprint. LawArXiv, September 24, 2018. https://doi.org/10.31228/osf.io/7fdyr.

systems, and the technological solutions that are employed ensure that DRM [Digital Rights Management] protocols are in place."[127]

During the pandemic, many libraries have experimented with controlled digital lending through the HathiTrust Emergency Temporary Access Service or their own course reserve systems in order to meet researcher and student needs. Many library consortia and working groups have been studying controlled digital lending, considering it as a model for providing access to items requested through interlibrary loan,[128] and starting to develop guidelines and standards. For example, the Mellon Foundation has provided funding to the National Information Standards Organization (NISO) to support the development of a recommended practice for controlled digital lending.[129]

However, the legal rationale for this service has not yet been tested in court. As a pioneer in controlled digital lending, the Internet Archive developed systems to allow it to lend digital proxies for print books under strict restrictions aligned with emerging guidelines. The COVID-19 pandemic inspired the Internet Archive to launch the National Emergency Library in March 2020, temporarily lifting their owned-to-loaned limit in order to provide access to millions of books that could not otherwise be accessed while libraries were closed during lockdown. This action led a coalition of publishers to file a lawsuit, prompting the Internet Archive to close the National Emergency Library in June 2020 and once again limit access to one borrower at a time. Since then, the case has been working its way through the courts. Authors, legal scholars, professional organizations, and trade associations have been lining up on both sides of the argument in *Hachette v. Internet Archive* as both parties filed motions for summary judgment.[130]

This case is poised to have profound implications for the future of controlled digital lending in libraries. Publisher arguments seem to target not just the National Emergency Library but also the underlying foundation of controlled digital lending itself. As described by the Chair of Library Futures, a project of NYU Law's Engelberg Center, the case pits libraries' traditional role in lending books that they own against the publishers' desire to license eBooks on their terms. Yet, with the limits imposed by CDL, the digital loan has no more impact on the market

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[127] Currier, Chad, and Alissa Centivany, "Controlled Digital Lending," *Proceedings of the Association for Information Science and Technology* 58, no. 1 (October 2021): 83. https://doi.org/10.1002/pra2.438.

[128] BLC Controlled Digital Lending Working Group, "Consortial CDL: Implementing Controlled Digital Lending as a Mechanism for Interlibrary Loan," 2021.

[129] NISO, "NISO Awarded Mellon Funding for Controlled Digital Lending Project | NISO Website," NISO, September 2021. https://www.niso.org/press-releases/2021/09/niso-awarded-mellon-funding-controlled-digital-lending-project.

[130] Albanese, Andrew, "Publishers, Internet Archive Trade Reply Briefs in Book Scanning Case," PublishersWeekly.com. Accessed October 18, 2022. https://www.publishersweekly.com/pw/by-topic/industry-news/libraries/article/90246-publishers-internet-archive-trade-reply-briefs-in-book-scanning-case.html.

than a physical loan.[131] Currier and Centivany further document the arguments for and against controlled digital lending within the context of the U.S. and Canada, ultimately concluding "that the promise of the lending model should outweigh its potential risks. Applying ethical principles guided by the overarching policy motivating copyright law, we suggest that CDL initiatives must not be thwarted by the overzealous application of legal rules."[132]

Off-Site Storage, Shared Print & Collective Collections

Since Harvard implemented its high-density storage system in 1986, and California State University Northridge installed the first Automated Storage & Retrieval System in 1992, libraries have been utilizing these storage models to address space challenges. Some high-density storage facilities are for an individual institution, while others are consortial or collaborative; these facilities may also sometimes offer space to libraries outside the founding collaboration, as Texas A&M University and the University of Texas did with their Joint Library Facility in 2017.[133] Where libraries originally used off-site storage as a way to create space for new acquisitions by storing low-use materials, they are increasingly used to clear shelves in order to reconfigure spaces for students, study, collaboration, and new services.[134] As the collections in these facilities have grown, demand for the stored materials has also increased. As noted by Laskowski and Maddox Abbott regarding the facility at the University of Illinois at Urbana-Champaign, "Rather than warehousing a static collection of never-leaving library materials, Oak Street Library houses a vibrant, circulating collection of items."[135]

The shift of these high-density facilities from storage to service has also required new consideration of staffing models and workflows.[136] However, even these high-density facilities are becoming poised to reach capacity. With little hope for more funding to build extensions, libraries will increasingly need to tackle the "unique challenges of deaccessioning materials from

[131] Barlow, Charlie, Kyle Courtney, Tom Cramer, David R. Hansen, Jill Morris, Jill Hurst-Wahl, and Genya O'Gara, "Statement on Using Controlled Digital Lending as a Mechanism for Interlibrary Loan," CDL Co-op, 2021. https://nrs.harvard.edu/URN-3:HUL.INSTREPOS:37371630.

[132] Currier and Centivany, "Controlled Digital Lending", 80-81.

[133] Valdes, Zachary, and Wyoma vanDuinkerken, "Leveraging Collaborative Repository 'Resource-In-Common' Model to Find Space – and Solace – In Downsizing Legacy Print Collection: A Case Study," *Collection Management* 47, no. 1 (January 2, 2022): 2–19. https://doi.org/10.1080/01462679.2021.1875094.

[134] Kovalcik, Justin, and Mike Villalobos, "Automated Storage & Retrieval System," *Information Technology and Libraries* 38, no. 4 (December 16, 2019): 114–24. https://doi.org/10.6017/ital.v38i4.11273.

[135] Laskowski, Mary S., and Jennifer A. Maddox Abbott, "Collaborative Collection Building: Greater than the Sum of Its Parts," *Journal of Library Resource Sharing* 30, no. 3–5 (October 20, 2021): 63. https://doi.org/10.1080/1072303X.2022.2063467.

[136] Kovalcik and Villalobos, "Automated Storage & Retrieval System."

library storage" while also continuing to expand shared print programs to extend capacity.[137] This calls for more intentionality and collaboration in collection building and management across storage facilities in support of shared print programs and collective collections.

Collective collections, as defined by Lavoie, Dempsey, and Malpas, "are the combined holdings of a group of libraries, analyzed and possibly managed as a unified resource." Put another way, "Collective collections are library collections at scale."[138] Shared print initiatives are an essential and growing component of healthy collective collections. As digital access expanded, usage patterns shifted, and space needs multiplied, libraries turned to shared print programs to collaboratively secure the long-term retention of print materials. Just as libraries have long collaborated on collection development since they could not purchase everything on their own, they now collaborate on collection management because they cannot preserve everything on their own–but they can secure access to a broad and deep collection of materials together. Focused initially on serials through regional initiatives such as the Eastern Academic Scholars' Trust (EAST), Florida Academic Libraries Repository (FLARE), and Western Regional Storage Trust (WEST), shared print programs have expanded to include monographs through initiatives like the HathiTrust Shared Print Program, which has secured commitments for the long-term retention of 18 million items representing 5.4 million unique titles.[139] As these shared print programs have grown, national organizations such as the Rosemont Shared Print Alliance[140] and the Partnership for Shared Book Collections[141] have emerged to facilitate collaboration and coordinate recommended practices. -

Working groups are currently investigating and developing best practices related to resource sharing, retention periods, numbers of copies, discovery and disclosure of items, and more. In particular, metadata standards and accurate metadata have emerged as core elements within these programs. As stated by Lavoie, Dempsey, and Malpas, "The value of collective collections is inextricably linked to data comprehensiveness and quality."[142]

Libraries are making decisions about what to retain based on information in records for items in shared print collections, and shared print initiatives are striving to retain an optimal number of

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[137] Johnson, Charlotte M., "Revisiting the Library Storage Literature Review," *Collection Management*, February 24, 2022, 7. https://doi.org/10.1080/01462679.2022.2043978.

[138] Lavoie, Brian, Lorcan Dempsey, and Constance Malpas, "Reflections on Collective Collections," *College & Research Libraries* 81, no. 6 (2020): 981. https://doi.org/10.5860/crl.81.6.981.

[139] Weltin, Heather, and Natalie Fulkerson, "Old Texts, New Networks: HathiTrust and the Future of Shared Print," In *Transforming Print: Collection Development and Management for Our Connected Future*, 65–79. ALA Editions, 2021. http://deepblue.lib.umich.edu/handle/2027.42/169166.

[140] "Rosemont Shared Print Alliance," Accessed February 2, 2023. https://rosemontsharedprintalliance.org/.

[141] "The Partnership For Shared Book Collections," Accessed February 2, 2023. https://sharedprint.org/.

[142] Lavoie, Dempsey, and Malpas, "Reflections on Collective Collections," 994.

copies. Therefore, it is essential to have accurate metadata so people can feel confident in their retention and withdrawal decisions. Inventories can be one tool for improving the accuracy of contributor records in order to increase confidence when items are incorporated into shared print collections,[143] and work has also been done to develop and enhance tools for collections analysis to support shared print collaborations.[144] Such work on guidelines, standards, and tools is expected to continue.

Implications

- Incorporating diversity audits strategically into the workflows of cataloging, acquisitions, or other aspects of collection management may serve as a tangible way for academic librarians to advance equity, diversity, inclusivity, and accessibility.
- E-preferred monograph acquisition models will require libraries to resolve sharing-related challenges, for example providing access to full eBooks through interlibrary loan.
- Libraries should monitor developments related to controlled digital lending, specifically the outcome of the *Hachette v Internet Archive* case, while preparing to experiment with this emerging service.
- Space constraints and shared print collaborations call for libraries to adopt a more intentional approach to building and managing collections in their high-density and off-site storage facilities. Libraries should monitor and participate in the development of emerging shared print standards and guidelines.

Emerging Technologies

Digital Transformation

The term "digital transformation" was coined in 2011 by the consulting firm Capgemini, in partnership with MIT.[145] Betsy Reinitz, EDUCAUSE's director of enterprise information technology (IT) programs describes digital transformation as "the process of optimizing a college or university through shifts in culture, workforce and technology" to deploy digital solutions that

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[143] Michaels, Sherri, and Becca Neel, "Conducting an Inventory with Shared Print in Mind," *Collection Management* 46, no. 2 (April 3, 2021): 142–56. https://doi.org/10.1080/01462679.2020.1818343.

[144] Jemison, Dana, Lucy Liu, Anna Striker, Alison Wohlers, Jing Jiang, and Judy Dobry, "Enhancing Print Journal Analysis for Shared Print Collections," *The Code4Lib Journal*, no. 51 (June 14, 2021). https://journal.code4lib.org/articles/15649.

[145] Lampron, Dave, "Why Saying 'Digital Transformation' Is Wrong," Techopedia.com, 2022. www.techopedia.com/why-saying-digital-transformation-is-no-longer-right/2/34652.

enable an institution's mission and goals serving students and the community.[146] Digital technologies associated with data analytics are intrinsic parts of streamlining processes and improvement of operational efficiency in the work of organizations. Nonetheless, security[147] and privacy[148] concerns still exist. Digital transformation can also be about doing things differently—creating a new business or operational model by using modern information and computer technologies. It leverages existing knowledge to change the essence of an organization—its culture, management strategy, technological mix, and operational setup.[149] It also improves the user experience as expectations around products and services change.[150] [151]

Dobrica Savić notes that digital transformation necessitates the library workforce of tomorrow to develop new competencies including "Digital literacy or technical knowledge" and "Transdisciplinary approach[es]" where previous tasks concerning collecting and processing materials are left to harvesting software tools or evaluating information is primarily accomplished through Artificial Intelligence (AI) algorithms.[152] Savić notes that some researchers see the possibility of a major change in libraries where they have highly automated collections of electronic texts manipulated by sophisticated AI-based applications, offering text understanding and interpretation, aggregation of ideas, intelligent argumentation, and complex presentation of existing concepts.[153]" Technology may fundamentally alter standard services and resources offered by libraries.

The digital transformation perspective places technology at the core of an organizational strategy; yet it is nonetheless "about changing personal beliefs and organizational culture"[154] where people can use technology as a way to meet the goals they had previously set. It is not technology that drives change; it is the people who know how to use digital technology, create IT

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[146] Hayhurst, Chris, "How Higher Ed Institutions Manage Long-Term Digital Transformation Projects," EdTech Magazine, 2022. https://edtechmagazine.com/higher/article/2022/02/how-higher-ed-institutions-manage-long-term-digital-transformation-projects.

[147] Davis, Clayton, "Does a Lack of AI Security Mean More Cyberattacks Are Coming?," Database Trends and Applications, November 1, 2021. https://www.dbta.com/Editorial/Trends-and-Applications/Does-a-Lack-of-AI-Security-Mean-More-Cyberattacks-are-Coming-149731.aspx.

[148] Murdoch, "Privacy and Artificial Intelligence," 122.

[149] Savić, Dobrica, "Keeping Libraries Relevant in a Digitally Transformed World," Online Searcher, 2022. https://www.infotoday.com/OnlineSearcher/Articles/Features/Keeping-Libraries-Relevant-in-a-Digitally-Transformed-World-150913.shtml.

[150] Boulton, Clint, "What Is Digital Transformation? A Necessary Disruption," CIO, 2021. https://www.cio.com/article/230425/what-is-digital-transformation-a-necessary-disruption.html.

[151] Newton, George, "Machine Learning and Its Impact on Digital Transformation," *Coruzant Technologies* (blog), October 30, 2021. https://coruzant.com/ai/machine-learning-and-its-impact-on-digital-transformation/.

[152] Savić, "Impact of Digital Transformation."

[153] Savić, "Impact of Digital Transformation."

[154] Lampron, "Why Saying 'Digital Transformation' Is Wrong."

sustainable solutions, and leverage existing knowledge collaboratively to make their work more impactful.

Organizations have adopted and integrated new digital technologies to add greater value to their services. Technological developments, such as big data, artificial intelligence, machine learning, automation,[155] data analytics, blockchain, augmented reality and the Internet of Things are a few technologies driving transformative change.[156] These enablers may likely have a profound impact on how academic departments and administrators strategize about the future of research, student learning, and service.

Deja, Rak, and Bell state that "Academic librarians have become important actors in the context of digital transformation."[157] In response to the pandemic, academic librarians had to adapt to online education as they began to work remotely. They emerged "as experts, collaborators, and connectors to services and resources across the university."[158] Times were also difficult for teaching faculty at universities, who needed to adopt new ways of engaging with students and assessing learning, as well as technologies to teach online.[159] In light of this environment, digital transformation has emerged as an opportunity for "academic research libraries [that] have moved to working more collaboratively with users."[160] At a high level, it raises the question of how to maintain the adequate balance between supporting operational stability and seeking innovative solutions to enhance services in alignment with the organization's strategic plan. And, "for many academic libraries, the biggest challenge has been the transfer of comprehensive information services to the online space."[161]

Advances in hardware and software technologies and products, such as cloud services, computing processing power, and automation systems can have a transformational impact on

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[155] Savić, "Impact of Digital Transformation."

[156] Digital Adoption, "What Are the 4 Main Areas of Digital Transformation?," Digital Adoption, March 8, 2020. https://www.digital-adoption.com/what-are-the-4-main-areas-of-digital-transformation/; Deja, Marek, Dorota Rak, and Brigitte Bell, "Digital Transformation Readiness: Perspectives on Academia and Library Outcomes in Information Literacy," *The Journal of Academic Librarianship* 47, no. 5 (2021): 102403. https://doi.org/10.1016/j.acalib.2021.102403.

[157] Deja et al., "Digital Transformation Readiness."

[158] Longmeier, Meris, and Sarah Murphy, "Framing Outcomes and Programming Assessment for Digital Scholarship Services: A Logic Model Approach," *College & Research Libraries* 82, no. 2 (2021): 142. https://doi.org/10.5860/crl.82.2.142.

[159] Day, Terence, I-Chun Catherine Chang, Calvin King Lam Chung, William E. Doolittle, Jacqueline Housel, and Paul N. McDaniel, "The Immediate Impact of COVID-19 on Postsecondary Teaching and Learning," *The Professional Geographer* 73, no. 1 (January 2, 2021): 1–13. https://doi.org/10.1080/00330124.2020.1823864.

[160] Deja et al., "Digital Transformation Readiness."

[161] `Rafiq, Muhammad, Syeda Hina Batool, Amna Farzand Ali, and Midrar Ullah, "University Libraries Response to COVID-19 Pandemic: A Developing Country Perspective," *The Journal of Academic Librarianship* 47, no. 1 (2021): 102280. https://doi.org/10.1016/j.acalib.2020.102280.

organizations, including higher education. In the face of these challenges, determinants for successfully executing digital transformation strategies and planning[162] lie in an organization's ability to configure the right team of people who have the skills and qualities to work together and who can bring change.[163] At the same time, it can make people skeptical about the future of their work when digital technologies reshape the workplace[164] and change organizational structures.[165]

Learning Analytics

Data continues to have an ever-increasing impact on higher education institutions, both in the function of the institution and the research produced therein. Big data and learning analytics attempt to inform "admission decisions, retention and enrollment management, student life and engagement, academic and career advising, student learning and assessment, and academic program planning."[166] This section will discuss the impact data has on the digital transformations of higher education institutions and the need for more intensive scrutiny of learning analytics practices.

The Society for Learning Analytics Research defines learning analytics as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which is occurs." [167] Due to the impact of the COVID-19 pandemic, many institutions have invested more heavily in online learning management systems, which offer the ability to collect data on student learning and

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[162] Digital Adoption, "What Are the 4 Main Areas."

[163] Davenport, Thomas H., and Thomas C. Redman, "Digital Transformation Comes Down to Talent in 4 Key Areas," *Harvard Business Review*, May 21, 2020. https://hbr.org/2020/05/digital-transformation-comes-down-to-talent-in-4-key-areas.

[164] Marsh, Elizabeth, Elvira Perez Vallejos, and Alexa Spence, "The Digital Workplace and Its Dark Side: An Integrative Review," *Computers in Human Behavior* 128 (2022): 107118. https://doi.org/10.1016/j.chb.2021.107118.

[165] Dąbrowska, Justyna, Argyro Almpanopoulou, Alexander Brem, Henry Chesbrough, Valentina Cucino, Alberto Di Minin, Ferran Giones, et al., "Digital Transformation, for Better or Worse: A Critical Multi-level Research Agenda," *R&D Management* 52, no. 5 (2022): 930–54. https://doi.org/10.1111/radm.12531.

[166] Cornelisz, Ilja, "Big Data on Campus. Data Analytics and Decision Making in Higher Education," Karen L. Webber, Henry Y. Zheng, Johns Hopkins University Press, Baltimore, MD, 2020. *Higher Education Quarterly* 76, no. 4 (October 2022): 893–97. https://doi.org/10.1111/hequ.12373.

[167] Society for Learning Analytics Research (SoLAR), "What Is Learning Analytics?," Accessed February 2, 2023. https://www.solaresearch.org/about/what-is-learning-analytics/.

learning habits.[168] Higher education institutions are generating massive datasets that can be analyzed and used to their benefit by focusing on data-informed digital transformations.

One way institutions use learning analytics is to offer real-time student support by "collecting, analyzing, and providing feedback on a variety of campus educational data."[169] In this way, professors and academic leaders can track student performance and attempt to intervene before failure, therefore boosting student success metrics like retention rates as well as student well-being. Umer et al. states that "Predicting student performance is one of the most researched topics of EDM [Educational Data Mining]."[170] Data and learning management systems can use both "past performance" measures and attendance tracking to identify students who are at risk of failing or receiving poor marks in time for teachers to potentially intervene.[171]

However, there are concerns about the invasiveness of collecting such data: "learning analytics opens up a student's life to granular examination in ways that clearly challenge existing professional norms, policies, and privacy protection".[172] Institutions have to be conscious of the way they interact with these students: "when crudely done [interventions] can discourage students so much that they drop out, and may disproportionately discourage students who are first-generation or who don't feel as welcome in a college environment."[173] Studies have found that the use of learning analytics as a proactive measure, like messaging students directly about the possibility of failing a class or other forms of communication with specific student populations, can feel invasive or discriminatory.[174] Predictions and analyses from big data sets can mirror or further racial, socio-economic, or other biases already present in such data. Paris et al. state that "learning technology in higher education is a site of critical concern, binding together issues of technocratic rationality, privacy, and surveillance," citing sources to reinforce

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[168] Umer, Rahila, Teo Susnjak, Anuradha Mathrani, and Lim Suriadi, "Current Stance on Predictive Analytics in Higher Education: Opportunities, Challenges and Future Directions," *Interactive Learning Environments*, June 6, 2021, 1–26. https://doi.org/10.1080/10494820.2021.1933542.

[169] Tang, Ziye, "Big Data Analysis and Modeling of Higher Education Reform Based on Cloud Computing Technology," Edited by Hangjun Che. *Security and Communication Networks* 2022 (August 19, 2022): 1–11. https://doi.org/10.1155/2022/4926636.

[170] Umer et al., "Current Stance on Predictive."

[171] GovTech, "7 Ways Smart Universities Use Data and Analytics," August 21, 2015. https://www.govtech.com/education/7-Ways-Smart-Universities-Use-Data-and-Analytics.html.

[172] Jones, Kyle M.L., and Lisa Janicke Hinchliffe, "Ethical Issues and Learning Analytics: Are Academic Library Practitioners Prepared?," *The Journal of Academic Librarianship*, October 2022, 102621. https://doi.org/10.1016/j.acalib.2022.102621.

[173] Young, Jeffrey R, "Can Analyzing Clicks in Digital Systems Predict Which Students Are Struggling? It Depends. - Edsurge News," EdSurge, October 14, 2022. https://www.edsurge.com/news/2022-10-14-can-analyzing-clicks-in-digital-systems-predict-which-students-are-struggling-it-depends.

[174] Swaak, Taylor, "The Puzzle of Student Data," The Chronicle of Higher Education. The Chronicle of Higher Education, 2022. https://www.chronicle.com/chronicle-intelligence/report/the-puzzle-of-student-data.

the findings that "both historical and contemporary surveillance technologies are deployed on less powerful groups to control these groups and extract economic value from them."[175]

Using big data and analytics can potentially help institutions gain a better understanding on how students succeed academically and what affects their ability to learn. However, in order to ensure positive outcomes, Paris et al. suggest that institutions create "more robust intellectual property protections for students and instructors, and greater institutional transparency in all dealings, especially when it comes to student data."[176] As the academic library finds its role in this process, it is important to recognize that learning analytics can be seen as extending on traditional styles of assessment practiced in the library and that "to *not* participate in learning analytics may limit a library's ability to serve students' educational interests."[177] Since librarians are traditionally sensitive to privacy concerns and intellectual freedom, this change in assessment and evaluation style will necessitate an expansion of librarians' skill sets and responsibilities.

Academic libraries are expected to be at the forefront of supporting educational and research needs, a challenge which "triggers not only the expansion of traditional library services, but also leads to adoption of a set of new roles and responsibilities," including, but not limited to data management plan assistance, research data management, expansion of data literacy qualifications of existing personnel, and integrating the research and educational process into library services.[178] Jones and Hinchliffe conclude their study by recognizing "important professional problems: a gap in privacy literacy, loose ethical guardrails depending on research or evaluation practices, and a need for more training."[179] In addition to spearheading movements towards Open Educational Resources (OERs), Open Access (OA), OA Publishing, and more, libraries are expected to work with institutional research data repositories and provide access to datasets generated on campus. In a research report published in 2022, Ruediger et al. found that, "quantitative data has gained stature as perhaps the most critical information literacy, the need for libraries to expand the support they provide for data and quantitative literacies has become acute."[180]

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[175] Paris, Britt, Rebecca Reynolds, and Catherine McGowan, "Sins of Omission: Critical Informatics Perspectives on Privacy in e-Learning Systems in Higher Education," *Journal of the Association for Information Science and Technology* 73, no. 5 (September 12, 2021): 708–25. https://doi.org/10.1002/asi.24575.

[176] Paris et al., "Sins of Omission."

[177] Jones & Hinchliffe, "Ethical Issues and Learning Analytics."

[178] Tzanova, Stefka, "Changes in Academic Libraries in the Era of Open Science," Edited by Carina Bossu and Tamara Heck. *Education for Information* 36, no. 3 (September 25, 2020): 281–99. https://doi.org/10.3233/EFI-190259.

[179] Jones & Hinchliffe, "Ethical Issues and Learning Analytics."

[180] Ithaka S+R., "Fostering Data Literacy," Accessed February 2, 2023. https://sr.ithaka.org/publications/fostering-data-literacy/.

Blockchain

Khan et al. defined blockchain technology as "a distributed and decentralized public digital ledger, which is employed to save dynamic transaction data and static records across several computers so that each record could not be modified retroactively without the collusion of the network and alteration of all subsequent blocks."[181] Still used in cryptocurrency and various other applications including healthcare and voting systems,[182] blockchain technology attempts to provide secure, persistent, reliable, transparent, and decentralized data transfer capabilities.

There have been myriad recent applications to libraries. LibChan is a blockchain-based Distributed Library Management System used to loan physical materials. Patrons can provide the library books directly to other library users without bringing a physical book back to the library.[183] Ethereum is a platform that supports cryptocurrency but can also be used for building blockchain-based smart contracts to lend and borrow books using a web application.[184] Lee's team proposed a new e-book circulation system which uses an Ethereum blockchain network to store sensitive data and provide a user-friendly reading experience in multiple devices.[185]

Additionally, Publica is a platform using blockchain technology to innovate how books are funded, distributed, and read by offering "author-centric peer-to-peer financial relations" between authors and supporters.[186] There is Orvium, a blockchain-based Scholarly Publications & Digital Rights Management platform. Anyone can register and publish on Orvium, receive tokens, and create a unique, verifiable record accessible to anyone with the goal to help researchers publish faster and expand scholarly networks.[187] Finally there is ARTiFACTS, a blockchain-based platform for researchers to securely and permanently record scientific and scholarly artifacts right within their workflow from the earliest stages of research with the aim for researchers to secure the provenance of their work.[188]

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[181] Khan, Asad Ullah, Zhiqiang Zhang, Milad Taleby Ahvanooey, and Wajid Rafique, "Opinion Mining towards Blockchain Technology Adoption for Accessing Digital Library Resources," *Aslib Journal of Information Management* 74, no. 1 (January 3, 2022): 135–57. https://doi.org/10.1108/AJIM-01-2021-0016.

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Future applications for blockchain technology are myriad, but most blockchain application projects in libraries are still in the development phase. The following applications tend to be more promising and could be implemented in libraries soon. Blockchain technology could assist access services and interlibrary loan programs become more efficient through better records management.[189] It may also allow new distributed, large-scale metadata systems[190] and peer-to-peer sharing of digital contents.[191]

Artificial Intelligence

Artificial Intelligence (AI) tools and services have been growing rapidly. Of particular note are ChatGPT and Dall-E, both products of the company OpenAI, which states that "OpenAI's mission is to ensure that artificial general intelligence (AGI)—by which we mean highly autonomous systems that outperform humans at most economically valuable work—benefits all of humanity."[192] As of early 2023 these tools are open to the public but will be monetized later.[193] Dall-E can create unique images and make realistic edits to existing images–all from providing natural language prompts like "a stained glass window depicting a robot." Another image generating AI system, Midjourney, created surprisingly beautiful and realistic images from a prompt involving avante-garde filmmaker Alejandro Jodorowsky and the movie Tron–eliciting many questions about aesthetics, art, authorship, and human creativity.[194]

The AI tool ChatGPT can also be given natural language prompts like "write a haiku about driving to work" or "write 400 words about the relationship between Hamlet and Gertrude" and provide text responses with sometimes surprisingly accurate and seemingly human responses. It can also input natural language prompts and output code or respond to tasks like pretending to offer career advice. The implications of a widely available AI system that can plausibly produce human text is already causing disruption in academia and education broadly. The International

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[189] Ma, Zixin, and Ziwei Xia, "Exploration of University Library Management Mode from the Perspective of Blockchain Technology," *Frontiers in Business, Economics and Management* 3, no. 2 (2022): 47-49.

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[191] Omame, Isaiah Michael, and Juliet C. Alex-Nmecha, "Application of Blockchain in Libraries and Information Centers," In *Handbook of Research on Knowledge and Organization Systems in Library and Information Science*, pp. 384-397. IGI Global, 2021.

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[194] Pavich, Frank, "Opinion | This Film Does Not Exist," *The New York Times*, January 13, 2023, sec. Opinion. https://www.nytimes.com/interactive/2023/01/13/opinion/jodorowsky-dune-ai-tron.html.

Conference on Machine Learning (ICML) announced a policy that "Papers that include text generated from a large-scale language model (LLM) such as ChatGPT are prohibited unless the produced text is presented as a part of the paper's experimental analysis."[195] New York City's Department of Education blocked access to ChatGPT on its network.[196] Instructors in schools like Rutgers and George Washington University are phasing out assignments that are take-home, open-book, or use prompts like "write five pages about X" in response to the ability of ChatGPT to help students accomplish such learning activities.[197] Other educators are embracing ChatGPT as a tool to improve students' writing.[198]

Worth noting is that ChatGPT falls prey to an issue scientists label as "hallucination" where ChatGPT has no conception of what is actually true or real–with OpenAI warning users that ChatGPT "may occasionally generate incorrect information."[199] Gary Marcus, Professor Emeritus at New York University has stated that ChatGPT is not an AI that will revolutionize many disciplines but a master of pastiche and mimicry.[200] More troubling is the ability for ChatGPT to take prompts relating to misinformation about healthcare and provide text output citing statistics and a journal article from the Journal of the American Medical Association when no such article or statistics exist.[201] Propagandists and state-sponsored misinformation and disinformation campaigns could potentially become much cheaper and easier to flood social media channels creating "a world in which we are unable to know what we can trust."[202]

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[195] Vincent, James, "Top AI Conference Bans Use of ChatGPT and AI Language Tools to Write Academic Papers," The Verge, January 5, 2023. https://www.theverge.com/2023/1/5/23540291/chatgpt-ai-writing-tool-banned-writing-academic-icml-paper.

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[198] Kelly, Samantha Murphy, "Teachers Are Adapting to Concerns about a Powerful New AI Tool | CNN Busines,." CNN, January 19, 2023. https://www.cnn.com/2023/01/19/tech/chatgpt-teachers-adjusting/index.html.

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[201] Marcus, Gary, "AI Platforms like ChatGPT Are Easy to Use but Also Potentially Dangerous," Scientific American. Accessed February 2, 2023. https://www.scientificamerican.com/article/ai-platforms-like-chatgpt-are-easy-to-use-but-also-potentially-dangerous/.

[202] Marcus, "AI Platforms like ChatGPT."

Google, Microsoft, and various Silicon Valley companies are investing heavily into comparable AI tools.[203] The Digital News Project report quotes a research firm which estimates that automated or semi-automated media will produce "25% of all internet data" in the next few years.[204]

Implications

- Federally funded research institutions are required to make all research publications and datasets publicly accessible by 2025 and libraries have tremendous potential to provide meaningful and lasting leadership in this area.
- Academic libraries can be an important transformative force in supporting digital transformation in terms of digital change at universities with consequences for online instruction, library operations, and digital resources and services.
- Academic librarians are increasingly required to gain skills beyond the traditional qualifications to include knowledge involving data and learning analytics, research data services, open educational resources, and digital publishing.
- While blockchain technology is in its early stages and faces numerous challenges regarding privacy, complexity, cost, and scalability, academic librarians that develop the technical expertise, policy, and training could lead future developments in metadata, research data, acquisitions, and other areas.
- While generative and providing unique images and text outputs, recent AI technology can also be used for unethical applications like spreading misinformation and disinformation. There may be opportunities in academic librarianship to address these challenges through research, pedagogical interventions, policy development, or in facilitating interdisciplinary scholarly dialogue on the subject.

Conclusion

The trends of higher education continue to shape the contours of academic librarianship. Concerns of equity, diversity, inclusivity, and accessibility have become less a distinct grouping of concepts and instead are becoming intermeshed with various dimensions of research, learning, and service. The same trend exists in academic libraries as DEIA concepts are becoming more infused in pedagogy, collection, staffing, and so on.

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[203] Huang, "Alarmed by AI Chatbots."

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Yet the relationship between higher education and academic libraries cuts both ways. The topics and currents identified in this report all provide opportunities for academic libraries to make their mark on higher education. The past few years have provided increasingly more junctures for academic libraries to develop policy, practices, theory, and research in new and emerging areas of higher education. While this requires librarians to develop new knowledge, skills, and abilities–this also means that academic librarians can make important, discrete contributions on topics like political polarization, open data requirements, AI, and myriad other areas.

Yet such innovation and impact have a cost. Library administrators will need to set priorities among these potential opportunities in order to ensure sustainable workloads for increasingly limited staffing. Devoting time and resources to pursuing new avenues will need to be evaluated in terms of the opportunity cost of providing fewer resources to existing, and perhaps successful, core responsibilities, services, and resources. The 2023 Environmental Scan aimed to help administrators and practitioners alike to make informed decisions concerning the most critical intersections of higher education and academic libraries.

Appendix: ACRL Research Planning and Review Committee, 2022-2023

Michael Flierl (Chair)
Associate Professor
The Ohio State University

Brian Quigley (Vice-Chair)
Head, Engineering & Physical Sciences Division
University of California, Berkeley

Tom Caswell
Associate Dean of Academic Engagement
University of Central Florida

Laura Costello
Director for Strategic Planning and Assessment
Rutgers University

Cindy Li
Associate Director of Tech & Innovation

Pratt Institute

Monica Maher
Online Learning & Education Librarian

Cristalan Ness
Social Sciences Resident Librarian
University of Michigan

Mary Piorun
Director, Library Services
University of Massachusetts Medical School

Patrice-Andre (Max) Prud'homme
Director, Digital Curation
Oklahoma State University

Kristin Van Diest
National Council for Preservation Information

Gregory Walker
Partner
Houser Walker Architecture

Minglu Wang
Research Data Management Librarian
York University

Anna Yang
Science Librarian
Santa Clara University

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