The Efficient Provision of Information Resources in Academic Libraries: Theory and Practice

David W. Lewis, Tina Baich, Kristi L. Palmer, and Willie M. Miller

Author’s Final Version, March 2022


Abstract

Due to the increasing availability of digital content and systems improvements that have accelerated physical delivery, academic libraries are afforded opportunities to more efficiently provide users access to library materials. A theory for efficient provision of information resources, and thus more efficient use of financial resources, was proposed by one of the coauthors in “The Future of Academic Library Materials Expenditures: A Thought Experiment.” The strategies on which the theory is based include purchase on demand, library publishing, and improved open access discovery. This article details the theory and then examines IUPUI University Library’s experience of implementing strategies based on this theory. The authors analyze the effectiveness of the theory and offer guidance for libraries considering a similar path.

Introduction

The COVID-19 pandemic and the stresses on university and library budgets it has brought will inevitably drive changes in library practice, but these changes were already under way and the pandemic has simply accelerated them. The changes were driven by a transformation in the technologies used to create, discover, provide access to, and preserve scholarly content. The migration of scholarly content from print on paper to digital documents on a worldwide network changed everything. Changes this big happen slowly, and this transition has been going on for some time. In 1992, when scholarly content in digital form and the Internet were just becoming widely available, Michael Buckland wrote, “Hitherto library services have been dominated by local catalogs, local collections, and great inequalities in the geographical distribution of services. The constraints on library service are changing right now. . . . All of this requires us to think again about the mission of the library, the role of the library, and the means of providing service. For the first time in one hundred years we face the grand
and difficult challenge of redesigning library service” (1992, 76). Thirty years on, the transition to digital networked content is complete. The contours of this redesign are clear, and they will be discussed in detail below.

The focus of this article is on what has been traditionally called “Collections,” though for reasons that will become clear “Resource Acquisition Model” is a better term. We focus on this aspect of library practice because we believe that Buckland is correct when he says, “The central purpose of libraries is to provide a service: access to information” (1992, 1). Changing the resource allocation model is also essential because this is where the largest portion of the library’s budget is spent. This includes the materials expenditures, but also a significant part of the library’s staffing. The process can, and in current circumstances must, be made more efficient. The simple fact is that academic libraries cannot maintain their past practices, so the choice is to do less and less the old way or to find new more efficient ways to meet users’ needs.

The theoretical basis for this has been laid out by one of the authors (Lewis 2015a, 2015b, 2016) and will be summarized and updated below. It is based on designing a model of library practice to match the characteristics of digital networked content and is modeled with a thought experiment showing how the model can be applied. The experience of the University Library at Indiana University–Purdue University Indianapolis (IUPUI), which will be reviewed, demonstrates how the theory can be put into practice in an actual library.

Theory: Background

The Power of Technology

It is important to begin by recognizing the extent of technological change. Here are two examples.

Example 1: Moore’s Law. Moore’s Law predicts the number of transistors that can be put onto an integrated circuit chip doubles every eighteen months; this means that in a decade capacity increases one hundred times. Moore’s Law specifically is about transistors, but it can be used as a proxy for the growth of the capacity of technology in general. As impressive as the growth predicted by Moore’s Law is, it might understate the extent of the change. Take, for example, the cost of sequencing a human genome. If Moore’s Law applied, we would have expected a decline in the cost of sequencing a human genome between 2000 and 2020 of two and a half orders of magnitude. In fact, the decline was more than five orders of magnitude, from nearly $100 million in 2000 to less than $700 in August 2020 (National Human Genome Research Institute 2020). If we translate this into “library units,” this is the difference between building a good-sized university library and purchasing a dozen books.

Example 2: The Music Industry. Alan B. Krueger in Rockonomics describes the music industry and how it dealt with the technology changes that began in 1999, when the
MP3 file format combined with the file sharing service Napster disrupted the established business model, and concludes with Spotify and cheap streaming services of today. He says, “The time we spend listening to music is up, while spending on music is down by 80 percent in real terms since 1999. A great deal has gotten even better” (2019, 265–66). Over the two decades between 1999 and 2019, the music industry went from selling vinyl albums and CDs in stores to selling individual digital versions of songs through iTunes and then streaming services. Costs are now a fraction of what they were and choice and access have expanded exponentially. Today, nearly anything you want to hear is available without leaving your home for a small monthly fee. Importantly, the story Krueger tells is about how business models changed and new services were offered by new firms.

The first example may be extreme, but it shows the relentless and exponential increases in technological capacity that we are experiencing. The second example shows how, by taking advantage of digital formats and the network, new business models can create profitable services that greatly enhance the user experience and, importantly, lower costs. While the music industry differs in many ways from scholarly publishing, there are reasons to expect similar changes, and libraries should push for them (Lewis 2020). As library services are redesigning, these two examples should be kept in mind. Technology provides the opportunity, but to take advantage of the enhanced technology, new ways of doing things are required.

Print on Paper versus Digital Networked Content

The differences between print on paper and digital networked content are at some level obvious, but it is worth reviewing them nonetheless. Digital content on the network has the following characteristics:

1. A copy can be instantaneously delivered anywhere in the world
2. A copy is the same as the original
3. A copy can be made at zero marginal cost

That is to say, as Andrew McAfee and Erik Brynjolfsson do, digital content should be “Free, Perfect and Instant” (2017, 135–37). First copy costs still exist, but the economics of digital networked content are fundamentally different from what came before. Print content, on the other hand, can be used by only one person in one place at a time, and creating and moving a copy around has a nontrivial cost.

Most library services come from the print-on-paper era and are based on practices tailored for the format. What is needed is to imagine changes that take into account the digital and networked nature of most scholarly content and design systems that are as different from past practice as streaming music is from Tower Records, a renowned retail music chain that operated in the United States (1960–2006), then expanded internationally, and later closed its doors.
The theory outlined below entails the use of five strategies that take advantage of the nature of digital content as a substitute for print-based strategies based on physical collections and the assumptions used to build them. The first two strategies, one for books and one for articles, are based on just-in-time delivery rather than just-in-case purchase models. The next two are based on the continued growth of a commons of academic and other content that is freely available on the web. The fifth strategy grows out of the previous two. In order for the commons to exist, investments in it must be made in open content and open infrastructure. Some of this investment must come from academic libraries. The first two are important in the near term because they allow the library to reduce expenditures and to reallocate the savings to projects that support the growth of open content that contributes to the commons. The strategies are considered below.

Strategy 1: Demand-Driven Acquisition (DDA) for Books

Demand-driven acquisition (DDA) can be effective for both print and e-books. It can provide the books that are needed at a lower cost than the just-in-case traditional approaches to collection building. It has been known since at least the Pittsburgh study in 1979 that as many as 50 percent of the books purchased for university library collections are never used (Kent 1979). This inefficiency could be justified when books went out of print and interlibrary loan was slow and unreliable.

Today, e-books can be delivered instantaneously, and even though vendors will sometimes remove them from their offerings, they don’t go out of print. Because of this, it makes no sense to purchase an e-book before there is an identified user who needs the title. The DDA model for the purchase of e-books was developed by netLibrary in 1999 and has been adopted, in one form or another, by most e-book vendors. It is also increasingly the case that many paper books can be very quickly acquired, and because of print-on-demand technologies they are less likely to go out of print, so using a DDA model for some classes of print books makes sense. It has also long been known that past use of a book is the best predictor of its future use, so this means of selection should be an efficient way to build a collection (Fussler and Simon 1961). A recent study by Kay Downey and Yin Zhang examined e-book DDA programs across eight libraries and found that use persists as Fussler and Simon’s study would have predicted (Downey and Zhang 2020).

Because DDAs work so well, especially for e-books, a strategy that favors e-books over print will likely be more cost-effective and can increase user satisfaction (Schroeder and Boughan 2018). The diversity of acquisitions options offered by vendors and publishers has increased in recent years, including subscription access to large collections, rent and then buy DDA plans, and evidence-based acquisitions (EBA), plans that combine features of subscription and DDA plans. Some mix of these options is likely to work best for any particular library, but the general strategy should be to lean heavily toward
options that respond to the known needs of users rather than an anticipated or prospective use—that is, just in time should be preferred to just in case, as this will always lead to lower costs per use and a more efficient use of library funds. One example of what is possible is the Bucknell University library, which moved to an exclusively demand-driven purchase model for books and significantly decreased the amount of money spent. Between 2012 and 2014 spending declined from slightly less than $600,000 to just over $100,000, without any notable reduction in the number of circulations. The result was "a vibrant collection that receives significant use" (Bedi and Snyder 2015).

Strategy 2: Article Purchasing Rather than Subscriptions for Journals

In many situations, subscriptions are not a cost-effective way of providing users the journal articles they need. While there are clearly situations where the level of use of a particular journal title makes a subscription the most economical choice, there are also likely to be journals where the required uses can be provided by purchasing individual articles. Establishing this is, at the most basic level, quite simple. If the number of uses multiplied by the cost to purchase individual articles is less than the subscription cost, then individual article purchase is the more economical means of providing users with the articles they need. For example, if a journal title is expected to have one hundred uses per year and the cost of purchasing individual articles is $25 per article, then the total cost would be expected to be $2,500 annually. If the subscription to the title is $3,000, then $500 can be saved and the title should be canceled and articles purchased separately. If, on the other hand, the subscription is $1,200, it should be kept. There are two other considerations. The first is the uncertainty of use. It may be wise to err on the side of keeping a subscription if the use varies by year or if the breakeven is close to the subscription cost. The other consideration is that in most cases a library is entitled to access the backfiles of a title it has paid for as part of a subscription even if the subscription is canceled. This means that the only articles that will need to be purchased will be those published after the cancellation goes into effect. Initially, this will be only a few issues. The gap will widen over time, and more articles will need to be purchased; yet this factor reduces the risk of this strategy in the short run.

For many libraries, exiting their "big deals" is the first priority. Unless this is done, libraries do not have the fiscal flexibility that is required to implement a purchase-on-demand alternative for the acquisition of articles. The Unsub tool (https://unsub.org) makes understanding alternatives easy and provides the justification needed to convince faculty of the reasonableness of canceling (Chawla 2020; Mulvany 2019; Poynder 2020). This strategy can only be implemented when journal cancellation decisions can be made on a title-by-title basis.

Providing individual articles through interlibrary loan has become fast and reliable. For example, the RapidILL system measures turnaround time in hours rather than days, has a more than 90 percent fill rate, and is notably cheaper than traditional interlibrary loan (ILL; Delaney and Richins 2012). Article delivery services such as the Copyright
Clearance Center’s Get It Now (www.copyright.com/academia/get-it-now/) can be used to supplement traditional interlibrary loan when quicker delivery is required. Get It Now offers “immediate fulfillment” to over 18,000 journals and can be a cost-effective means of providing articles (Suhr 2013; Jaskowiak and Spires 2018).

Open access versions of items requested through ILL are often available for about 25 percent of requests (Baich 2012; Duffin 2020). By loading Unpaywall (https://unpaywall.org) data into the library’s link resolver or using InstantILL (https://instantill.org), a version of the Open Access Button that can be built into ILL workflows, libraries can make locating open versions easy for users (Paxton et al. 2019).

Strategy 3: Open Access (OA) Will Become the Predominant Business Model for Journals

We believe, as one of us has written, that open access is inevitable (Lewis 2012). OA will continue to grow and eventually become the business model of choice for a large portion of scholarly journals. As a result, libraries will be able to significantly decrease the number of subscriptions they purchase. The best study of the growth of OA is by Heather Piwowar, Jason Priem, and Richard Orr (2019), who found that 31 percent of all journal articles are OA articles and 52 percent of all article views are to OA articles. They project 44 percent of all articles will be OA and 70 percent of all article views will be to OA articles by 2025.

In some cases, the growth in OA journals will automatically result in budget reductions. For example, when a journal converts a subscription journal to OA, the library will simply no longer be billed for the journal. In other cases, the library will need to make decisions to cancel subscription titles when a sufficient amount of comparable OA content becomes available in different OA journals or other OA venues, particularly preprint servers. This will be more difficult, but it should be manageable, at least to some degree.

It is unclear if funder initiatives, particularly Plan S (https://www.coalition-s.org), will increase the pace of open access publishing, but it could. In his study for ARL, CNI, and EDUCAUSE, Scout Calvert found that there is “a strong sense of convergence across all levels of research funding and infrastructure toward assuming openness as a general condition” (2020, 16). An increase in open access publishing, particularly when it replaces expensive STEM subscriptions, will have a large potential impact on libraries materials budgets. It will be important to monitor the pace of this change and the extent to which substitution is possible.
Strategy 4: The Growth in Open Content and Open Tools on the Web

This is probably the most difficult area to quantify, but it is clearly the case that there is an increasing quantity of quality content and good discovery tools available for free on the web. Google (https://www.google.com), Google Scholar (https://scholar.google.com), Wikipedia (https://en.wikipedia.org), and the Internet Archive (https://archive.org) are the obvious examples. But there are many others. Take discovery as an example. Free tools include the Directory of Open Access Journals (https://doaj.org), which indexes over five million open articles; Lens.org (https://www.lens.org), which among other things indexes the world’s patents; Semantic Scholar (https://www.semanticscholar.org), a philanthropically funded project of the Allen Institute for AI; Meta (https://www.meta.org), another AI enabled product funded by the Chan Zuckerberg Initiative; the National Library of Medicine’s PubMed (https://pubmed.ncbi.nlm.nih.gov); and Microsoft Academic (https://academic.microsoft.com/home), which claims to index a quarter of a billion publications.


It is hard to know how or when libraries will be able to substitute this content for content that they now purchase, but it is certainly the case that some substitution is possible. Government and international organization data, like those from the World Bank, are clear substitutes. TED, NPR, and the BBC are sources most libraries did not acquire in the past, so they are not clear substitutes but might replace newspaper or other purchased news content. Precisely how libraries will be able to reduce purchased content as a result of this growing body of high-quality web-based content is uncertain, but it is inevitable that opportunities will arise.

Strategy 5: Invest in Open Content and Infrastructure

Open content and tools are sometimes funded as part of an institution’s or a government’s core mission, for example, PubMed and PubMed Central, Data.gov, or the World Bank. Others are funded with secure philanthropy, such as Meta or Semantic...
Scholar. Google, Google Scholar, Google Books, and Microsoft Academic are commercial products with advertising as the ultimate source of support. The remaining open repositories and tools depend in one way or another on support from foundations through grants and from libraries through contributions of various sorts.

For libraries, contributing to these open tools and repositories is a choice. They are available whether the library contributes or not. The library can choose to take advantage of a free ride, and this leads to a collective action problem. John Wenzler (2017) has argued that libraries are incapable of solving the collective action problem and so will remain captive to the large commercial publishing firms. David W. Lewis (2017) has responded with a proposal that libraries commit to contributing 2.5 percent of their total budget to support open projects and that, if this becomes the accepted standard, open infrastructure and content can be adequately funded. At this point, Lewis’s proposal seems to be aspirational at best. A limited study of contributions to open infrastructure by ninety-one libraries found an average contribution of 1.5 percent of the overall library budget, with 75 percent of this going to library staffing. This means only an average contribution of less than 0.4 percent to projects outside the library itself (Lewis and Roy 2020). A survey of twenty-eight Canadian academic libraries spending on open services, platforms, content, and infrastructure averaged 3.09 percent of their total budgets, again with 75 percent going for library staff, meaning 0.8 percent went outside the library (Shearer 2020).

One area of contribution to open content that many libraries make is to article processing charges (APCs) for authors without other funding options. Shaun Yon-Seng Khoo studied the APCs of a group of for-profit, OA publishers and found that they increased at a rate well above inflation (Khoo 2019). Work by Sergio Copiello, who analyzed Elsevier’s business model, provides a similar assessment (2020). The maximum amount a library is willing to pay for an APC is discretionary; nonetheless, libraries should expect APCs to increase going forward.

The total level of investment most libraries are currently making is not adequate to support the open content and infrastructure that will be required. In the model that follows, we will be optimistic and assume that investments will be made at rates beyond what Lewis suggests.

**Theory: The Thought Experiment**

In order to show how the strategies outlined above might work, we conduct a thought experiment that projects the materials budget of a hypothetical library over a ten-year period. It is simpler than any real-life situation but should demonstrate what is possible. For the purposes of this experiment, we assume that the library is implementing these changes because of budget pressures but do not impose any specific overall budget restrictions, for example a 5 percent cut in any given year. Rather, we observe the effects on the budget as the changes are made. We also are conservative in the
estimates that drive the model on the assumption that changes are hard and libraries will typically be cautious in making them.

The hypothetical library we use has a materials budget of $3.25 million in year 1, allocated as shown in Table 1.

<table>
<thead>
<tr>
<th>Expenditures</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books (print and e-books)</td>
<td>$450,000</td>
</tr>
<tr>
<td>Journals</td>
<td>$1,750,000</td>
</tr>
<tr>
<td>Article Delivery</td>
<td>$50,000</td>
</tr>
<tr>
<td>Databases</td>
<td>$750,000</td>
</tr>
<tr>
<td>APC Fund</td>
<td>$100,000</td>
</tr>
<tr>
<td>Contributions to Open Content and Infrastructure</td>
<td>$150,000</td>
</tr>
<tr>
<td>Total</td>
<td>$3,250,000</td>
</tr>
</tbody>
</table>

We assume price increases as follows:
- Books—3.0 percent per year
- Journals—8.0 percent per year
- Articles (purchased individually)—5.0 percent per year
- Databases—5.0 percent per year
- APCs—5 percent per year

Average costs in Year 1 are assumed to be as follows:
- Books—$50.00
- Journals—$1,000
- Articles (purchased individually)—$25.00
- Average APC—$1,200

**Implementing Strategy 1: Moving to a DDA Model for Book Purchases**

For the purposes of our experiment, we assume that by moving to a DDA model for book purchasing over the first three years of the experiment our hypothetical library can reduce the amount spent on books by 20 percent in each of these years. After those three years the number of books purchased would remain constant. This is a conservative approach and notably less dramatic implementation than was done at Bucknell. The results of this change in the strategy for book purchasing are shown in Table 2. Over the decade the expenditures drop by 38.9 percent, or about $175,000, even as book prices increase by 30.5 percent. After the initial change in purchasing strategy the number of books purchased per year remains the same, just a bit more than 50 percent of the number purchased before the change.
Table 2: DDA Model for Book Purchases

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Book Budget</td>
<td>$450,000</td>
<td>$360,000</td>
<td>$288,000</td>
<td>$230,400</td>
<td>$237,312</td>
<td>$244,431</td>
<td>$251,764</td>
<td>$259,317</td>
<td>$267,097</td>
<td>$275,110</td>
</tr>
<tr>
<td>Cost per Book</td>
<td>$50.00</td>
<td>$51.50</td>
<td>$53.05</td>
<td>$54.64</td>
<td>$57.96</td>
<td>$59.70</td>
<td>$61.49</td>
<td>$63.34</td>
<td>$65.24</td>
<td></td>
</tr>
<tr>
<td>Books Purchased</td>
<td>9,000</td>
<td>6,990</td>
<td>5,429</td>
<td>4,217</td>
<td>4,217</td>
<td>4,217</td>
<td>4,217</td>
<td>4,217</td>
<td>4,217</td>
<td>4,217</td>
</tr>
</tbody>
</table>

Implementing Strategy 2: Purchasing individual articles as an Alternative to Journal Subscriptions

To model the implementation of this strategy, we assume that the number of journals subscribed to was reduced by 10 percent in years 2, 4, and 6, and that each time subscriptions were cut, the article delivery budget was increased by 30 percent. In other years, the journal budget was increased to maintain subscriptions. Also, in these years the number of articles purchased remains the same, and the budget is increased to support these purchases. The results are shown in Table 3.

Table 3: Purchasing individual Articles as an Alternative to Journal Subscriptions

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journal Budget</td>
<td>$1,750,000</td>
<td>$1,575,000</td>
<td>$1,701,000</td>
<td>$1,530,900</td>
<td>$1,653,372</td>
<td>$1,488,035</td>
<td>$1,607,078</td>
<td>$1,735,644</td>
<td>$1,874,495</td>
<td>$2,024,455</td>
</tr>
<tr>
<td>Cost per Title</td>
<td>$1,000</td>
<td>$1,080</td>
<td>$1,166</td>
<td>$1,260</td>
<td>$1,360</td>
<td>$1,469</td>
<td>$1,587</td>
<td>$1,714</td>
<td>$1,851</td>
<td>$1,999</td>
</tr>
<tr>
<td>Titles Purchased</td>
<td>1,750</td>
<td>1,458</td>
<td>1,458</td>
<td>1,215</td>
<td>1,215</td>
<td>1,013</td>
<td>1,013</td>
<td>1,013</td>
<td>1,013</td>
<td>1,013</td>
</tr>
<tr>
<td>Document Delivery Costs</td>
<td>$50,000</td>
<td>$65,000</td>
<td>$88,250</td>
<td>$88,725</td>
<td>$93,161</td>
<td>$121,110</td>
<td>$127,165</td>
<td>$133,523</td>
<td>$140,200</td>
<td>$147,210</td>
</tr>
<tr>
<td>Cost per Article</td>
<td>$25.00</td>
<td>$26.25</td>
<td>$27.56</td>
<td>$28.94</td>
<td>$30.39</td>
<td>$31.91</td>
<td>$33.50</td>
<td>$35.18</td>
<td>$36.94</td>
<td>$38.78</td>
</tr>
<tr>
<td>Articles Purchased</td>
<td>2,000</td>
<td>2,476</td>
<td>2,476</td>
<td>3,066</td>
<td>3,066</td>
<td>3,796</td>
<td>3,796</td>
<td>3,796</td>
<td>3,796</td>
<td>3,796</td>
</tr>
<tr>
<td>Combined Budget</td>
<td>$1,800,000</td>
<td>$1,640,000</td>
<td>$1,769,250</td>
<td>$1,619,625</td>
<td>$1,746,533</td>
<td>$1,609,144</td>
<td>$1,734,243</td>
<td>$1,869,167</td>
<td>$2,014,695</td>
<td>$2,171,664</td>
</tr>
</tbody>
</table>

With this strategy, the cost of journal subscriptions increases by 15.7 percent or about $275,000, and the cost of article delivery increases by 194.4 percent, or about $97,000, with the total cost of subscriptions and purchased articles over the decade increasing $371,664, or 20.6 percent. The number of subscriptions declines by 42.1 percent, and the number of individual articles purchased increases 89.8 percent.

This may not seem to be that impressive. However, if the total number of subscriptions and articles purchased remains at current levels and the library budget increases to cover the costs, the budget for journals will nearly double. Without other intentional library efforts to intervene, the budget for purchased articles would increase by 55.1 percent. The total budget for providing journal content would have increased by 98.7 percent and in year 10 would have been over $1.4 million more than with the suggested
strategy. Over the decade, the additional required expenditure would have been over $8 million.

Implementing Strategy 3: Open Access (OA) Will Become the Predominant Business Model for Journals

Lewis argues that OA journals are a distributive innovation and therefore the rate of adoption should increase at an exponential rate (2012). However, for the purposes of this model, we take a more conservative approach and use a straight-line estimation of the growth of OA article growth based on the estimates provided by Piwowar and her colleagues (2019). This would be an annual growth of 2.6 percent in the number of OA articles and 3.6 percent in the number of OA views.

We assume that libraries will have trouble capturing all of the savings that might accrue from this increase in OA. For the purposes of the model, we assume that half of this increase—1.3 percent—can be captured. Thus, the total journals budget (both the journal budget and the purchased articles budget) can be reduced by half of the cumulative increase in OA articles. The results are shown in Table 4.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative OA increase</td>
<td>1.3%</td>
<td>2.6%</td>
<td>3.9%</td>
<td>5.2%</td>
<td>13.0%</td>
<td>14.3%</td>
<td>15.6%</td>
<td>16.9%</td>
<td>18.2%</td>
<td></td>
</tr>
<tr>
<td>Total Journals Budget</td>
<td>$1,800,000</td>
<td>$1,640,000</td>
<td>$1,769,250</td>
<td>$1,619,625</td>
<td>$1,746,533</td>
<td>$1,609,144</td>
<td>$1,734,243</td>
<td>$1,869,167</td>
<td>$2,014,695</td>
<td>$2,171,664</td>
</tr>
<tr>
<td>Amount of OA Adjustment</td>
<td>$21,320</td>
<td>$46,001</td>
<td>$63,165</td>
<td>$90,820</td>
<td>$209,189</td>
<td>$247,997</td>
<td>$291,590</td>
<td>$340,483</td>
<td>$395,243</td>
<td></td>
</tr>
<tr>
<td>Total Journals Budget with OA Reduction</td>
<td>$1,800,000</td>
<td>$1,618,680</td>
<td>$1,723,250</td>
<td>$1,556,460</td>
<td>$1,655,714</td>
<td>$1,399,956</td>
<td>$1,486,246</td>
<td>$1,577,577</td>
<td>$1,674,211</td>
<td>$1,776,421</td>
</tr>
</tbody>
</table>

When strategy 3 is overlaid on strategy 2, there is an overall decline in expenditures on journal content over the decade of not quite $25,000, or a decline of 1.3 percent. This compares with a nearly doubling of expenditures, if no changes are made to the way journal content is acquired, and a 20.6 percent increase, if only strategy 2 is implemented. This demonstrates the importance of the library monitoring the growth of OA and being as aggressive as possible in capturing all of the potential savings that come from it.

As noted above, this strategy has the most potential to impact library budgets. If we use 2.6 percent rather than 1.3 percent as the rate of OA replacement of subscription articles and overlay this on strategy 2, the results are shown in Table 5. Here the overall decline in expenditures on journal content over the decade is not quite $136,500, or a decline of 7.6 percent.
Table 5: Open Access (OA) Will Become the Predominant Business Model for Journals at 2.6%

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cumulative OA increase</td>
<td>2.6%</td>
<td>5.2%</td>
<td>7.8%</td>
<td>10.4%</td>
<td>13.0%</td>
<td>15.6%</td>
<td>18.2%</td>
<td>20.8%</td>
<td>23.4%</td>
<td></td>
</tr>
<tr>
<td>Total Journals Budget</td>
<td>$1,800,000</td>
<td>$1,640,000</td>
<td>$1,769,250</td>
<td>$1,619,625</td>
<td>$1,746,533</td>
<td>$1,609,144</td>
<td>$1,734,243</td>
<td>$1,869,167</td>
<td>$2,014,695</td>
<td>$2,171,664</td>
</tr>
<tr>
<td>Amount of OA Adjustment</td>
<td>$42,640</td>
<td>$92,001</td>
<td>$126,331</td>
<td>$181,639</td>
<td>$209,189</td>
<td>$270,542</td>
<td>$340,188</td>
<td>$419,057</td>
<td>$508,169</td>
<td></td>
</tr>
<tr>
<td>Total Journals Budget with OA Reduction</td>
<td>$1,800,000</td>
<td>$1,597,360</td>
<td>$1,677,249</td>
<td>$1,493,294</td>
<td>$1,564,894</td>
<td>$1,399,956</td>
<td>$1,463,701</td>
<td>$1,528,979</td>
<td>$1,595,638</td>
<td>$1,663,495</td>
</tr>
</tbody>
</table>

Implementing Strategy 4: The Growth in Open Content and Open Tools on the Web

It is difficult to anticipate how free content on the web will substitute for the variety of database content purchased by libraries. It is though easy to imagine that many libraries will soon find that the money they spend on some resources will no longer be justified given the free alternatives. For the purpose of this exercise, we assume that databases can be reduced by 2 percent each year because of the substitution of free content for content that would previously have been purchased. With a 5 percent increase in the cost of the databases that continued to be purchased, the result is a net increase of 3 percent per year in the database budget. The result would be as shown in Table 6. Over the decade, there is an increase of about $228,500, or 30.5 percent, in the database budget.

Table 6: Growth in Open Content

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Budget</td>
<td>$750,000</td>
<td>$772,500</td>
<td>$795,675</td>
<td>$819,545</td>
<td>$844,132</td>
<td>$869,456</td>
<td>$895,539</td>
<td>$922,405</td>
<td>$950,078</td>
<td>$978,580</td>
</tr>
</tbody>
</table>

Implementing Strategy 5: Invest in Open Content and Infrastructure

There are two parts to the investment in open content and infrastructure. The first is the APC fund, which will need to respond both to the increasing cost of APCs—though this can be controlled by the library—and the increase in the amount of open access articles published by campus faculty. If we assume a 5 percent increase in the cost of APCs and use the rate of increase from the Piwowar et al. study, a 2.6 percent increase in the number of articles needing to have APCs funded with library support, we get the results shown in Table 7. The number of APCs funded would increase by 22, or 26.0 percent. The average cost of a funded APC would increase $662, or 55.1 percent. The required budget would need to increase by about $95,500, or 95.4 percent.
The second component of this investment is the contributions made to open content and infrastructure projects. These contributions are generally voluntary, but it is in each library’s long-term interest to have a strong open sector. Therefore, every library should aim to contribute its fair share. The hypothetical library in our model makes a contribution of $150,000 in year 1, or 4.6 percent of the library’s materials budget. We assume that the library sees this investment as a high priority and has a goal of doubling this investment to $300,000 in year 5 and doubling it again to $600,000 in year 10. If these increases were spread out over the years in equal steps, it would require $37,500 increases in years 2 to 5 and a $60,000 increase in years 6 to 10. This is shown in Table 8. This is an increase in this part of the budget of $450,00, or 300 percent. The combined investment in APCs and open content and infrastructure increases from $250,000 in year 1 to over $795,000 in year 10. This is an over $545,000, or 218.2 percent, increase.

Combining the Five Strategies

The results of combining all five strategies are shown in Table 9 and Figure 1. The overall library material budget increases over the decade by not quite $625,000 or a total of 19.5 percent. This equates to a 2.0 percent increase per year if spread evenly over the decade. However, as can be most easily seen in the chart, the increases occur in the later years.
Table 9: Budget with Strategies Implemented

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books (print and e-books)</td>
<td>$450,000</td>
<td>$360,000</td>
<td>$288,000</td>
<td>$230,400</td>
<td>$237,312</td>
<td>$244,431</td>
<td>$251,764</td>
<td>$259,317</td>
<td>$267,097</td>
<td>$275,110</td>
</tr>
<tr>
<td>Journals (both Subscriptions and Purchased Articles)</td>
<td>$1,800,000</td>
<td>$1,597,360</td>
<td>$1,677,249</td>
<td>$1,493,294</td>
<td>$1,564,894</td>
<td>$1,399,956</td>
<td>$1,463,701</td>
<td>$1,528,979</td>
<td>$1,595,638</td>
<td>$1,663,495</td>
</tr>
<tr>
<td>Databases</td>
<td>$750,000</td>
<td>$772,500</td>
<td>$795,675</td>
<td>$819,545</td>
<td>$844,132</td>
<td>$869,456</td>
<td>$895,539</td>
<td>$922,405</td>
<td>$950,078</td>
<td>$978,580</td>
</tr>
<tr>
<td>APC Fund</td>
<td>$100,000</td>
<td>$107,730</td>
<td>$116,058</td>
<td>$125,029</td>
<td>$134,694</td>
<td>$145,105</td>
<td>$156,322</td>
<td>$168,406</td>
<td>$181,423</td>
<td>$195,447</td>
</tr>
<tr>
<td>Contributions to Open Content and Infrastructure</td>
<td>$150,000</td>
<td>$187,500</td>
<td>$225,000</td>
<td>$262,500</td>
<td>$300,000</td>
<td>$360,000</td>
<td>$420,000</td>
<td>$480,000</td>
<td>$540,000</td>
<td>$600,000</td>
</tr>
</tbody>
</table>

Figure 1: Budget with Strategies Implemented
Interestingly, if the library’s budget remained at the year 1 level, and the library was allowed to keep unexpended funds, the year 1 budget would be adequate to fund the library’s materials budget until year 9, and the library would go into deficit only by a total of $635,000 in year 10. If the library received a 0.1 percent increase in its materials budget each year and could save surpluses, it would end the decade with a surplus of almost $95,000. If OA substitution could be captured at a 2.6 percent rate rather than 1.3 percent and the budget remained the same with unexpended funds carried forward, the deficit at the end of the decade would be only a little over $150,000. This demonstrates again the importance of this factor.

The percentage changes in the various parts of the budget are shown in Table 10. It is worth noting that the percentage of the library’s materials budget devoted to APCs, open content, and infrastructure goes from 7.7 percent in year 1 to 20.5 percent in year 10.

<table>
<thead>
<tr>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books (print and e-books)</td>
<td>13.8%</td>
<td>11.9%</td>
<td>9.3%</td>
<td>7.9%</td>
<td>7.7%</td>
<td>8.1%</td>
<td>7.9%</td>
<td>7.7%</td>
<td>7.6%</td>
<td>7.4%</td>
</tr>
<tr>
<td>Journals (both Subscriptions and Purchased Articles)</td>
<td>55.4%</td>
<td>52.8%</td>
<td>54.1%</td>
<td>51.0%</td>
<td>50.8%</td>
<td>46.4%</td>
<td>45.9%</td>
<td>45.5%</td>
<td>45.1%</td>
<td>44.8%</td>
</tr>
<tr>
<td>Databases</td>
<td>23.1%</td>
<td>25.5%</td>
<td>25.7%</td>
<td>28.0%</td>
<td>27.4%</td>
<td>28.8%</td>
<td>28.1%</td>
<td>27.5%</td>
<td>26.9%</td>
<td>26.4%</td>
</tr>
<tr>
<td>APC Fund</td>
<td>3.1%</td>
<td>3.6%</td>
<td>3.7%</td>
<td>4.3%</td>
<td>4.4%</td>
<td>4.8%</td>
<td>4.9%</td>
<td>5.0%</td>
<td>5.1%</td>
<td>5.3%</td>
</tr>
<tr>
<td>Contributions to Open Content and Infrastructure</td>
<td>4.6%</td>
<td>6.2%</td>
<td>7.3%</td>
<td>9.0%</td>
<td>9.7%</td>
<td>11.9%</td>
<td>13.2%</td>
<td>14.3%</td>
<td>15.3%</td>
<td>16.2%</td>
</tr>
</tbody>
</table>

What this example shows is that even with price increases, especially for journals, which make up about half of our hypothetical library’s materials budget in year 1, it is possible, by deploying a series of reasonable strategies, to survive the next decade without undue financial stress. These strategies should provide levels of service that are at least as good as those currently being achieved. In addition, the library significantly increases its contributions to open content and infrastructure. This is very good news.

**Practice: The IUPUI University Library**

Indiana University–Purdue University Indianapolis (IUPUI) is an urban public university composed of academic units from both Indiana University and Purdue University. IUPUI enrolls approximately 30,000 undergraduate, graduate, and professional students and employs more than 2,800 faculty and 4,600 staff (IUPUI n.d.-b; IUPUI Institutional
Research & Decision Support n.d.). IUPUI University Library serves two colleges and fourteen of the seventeen schools on the IUPUI campus. The professional schools of law, dentistry, and medicine all have their own library, providing their respective faculty, staff, and students with library services.

Lewis’s thinking has clearly influenced practice at IUPUI University Library (Library). As dean of the Library for eighteen years, Lewis instilled a deep commitment to open access and his thoughts on how to best bridge the gap between a subscription-based world and an open world have guided the development of new collection policies and services, starting with development of an Articles on Demand service for faculty in 2014. Recognizing the need to further evolve the Library’s practices around collections, members of the Collections Working Group began developing a new “Resource Acquisition Model” in 2017 that would change not only the way in which the Library acquires library resources but also its approach to the structure of the collections budget.

Practice: The Resource Acquisitions Model

The Resource Acquisition Model outlines steps toward more strategic and flexible use of Library funds through increasingly on demand collection building, allowing the Library to better meet the needs of all constituents. Implementation of this phased approach began in 2018 with full implementation planned for no later than the FY2023 planning cycle. Progress is regularly evaluated with revisions to the plan made accordingly. The new model fits under the larger umbrella of the Library’s collection development, which includes an emphasis on curating unique physical and digital collections. The Library provides access to more generalized content through a combination of purchases, licenses, and resource sharing services. By limiting purchases and providing more content on demand, the Library is able to provide access to a greater number of resources and meet a broader array of user needs. The model also acknowledges that its strategies are not a long-term solution but are, in fact, a means for providing access to resources until changes in scholarly communication reach critical mass and create more open access to information (IUPUI University Library 2018).

Strategy 1: Demand-Driven Acquisition

IUPUI University Library first ventured into the DDA of physical items through its ILL Purchase on Demand program, which began around 2004. The Library was encouraged to implement such a program by the experience of its neighbor, Purdue University, one of the earliest (if not the first) adopters of ILL Purchase on Demand. In a series of studies Purdue librarians found that titles purchased via the program circulated more frequently than those acquired through traditional selection processes (Nixon and Saunders 2010); the majority of the titles purchased on demand were within the scope of the collection; and the titles increased the interdisciplinary nature of the collection (Anderson et al. 2002, 2010). The Library’s experience with both ILL Purchase on
Demand and e-book DDA programs made a fully Books on Demand approach to the acquisition of monographs a feasible option. The Library continues to employ an ILL Purchase on Demand program alongside the new Books on Demand service. Simultaneously with the drafting of the Resource Acquisition Model, the heads of acquisitions and resource sharing began development of a Books on Demand service that is central to the Library’s move to a demand-driven collection development model. The head of acquisition fully implemented and launched the service during the 2019 fiscal year. Following a fall pilot with three subject areas, nearly all of the Library’s approval plans (both auto-ship and slips) were transitioned to a Books on Demand pool. Subject librarians utilize their expertise to set criteria for record inclusion, and records for these titles are loaded into the online catalog from where end users can request purchase of either a print or an electronic book as well as the speed with which they need the title.

The Books on Demand service eliminates the purchase of many titles that may never be used by library patrons. During 2020, nearly 38,000 records with a total list price of more than $2.7 million were loaded into the online catalog, a number far exceeding our purchasing power. Fewer than 450 titles were purchased on request, for a cost of slightly more than $38,000.

At the same time, the Library pursued an on demand approach for streaming video, which proved to be much less cost-effective. Year after year, on demand licensing costs outstripped the Library’s budget for films on demand until we were forced to step back from the on demand approach and instead license a large streaming video database. This has been a relatively common occurrence for academic libraries, as evidenced by articles like “Kanopy: Not Just Like Netflix, and Not Free” and “Once Upon a Time in Streaming Video” (Cagle 2019; Rodgers 2019). In fact, we initially followed a similar approach as Rodgers (2019, 501) describes by limiting the PDA pool by distributor, but still found the academic pricing model unsustainable. Rather than moving to mediation of the majority of streaming video requests, the Library has retained a smaller Films on Demand pool and instead turned to a subscription model for the majority of its film needs.

**Strategy 2: Article Purchasing**

In 2014, the Library began building an Articles on Demand service in collaboration with Serials Solutions and the Copyright Clearance Center (CCC) using CCC’s Get It Now. The need for such a service resulted from the need to cancel a significant number of science-related subscriptions. The Library approached the School of Science with a recommendation to “convert” approximately eighty titles to an on demand model. The proposed Articles on Demand service would provide faculty with unmediated access to canceled content quickly. During a six-month pilot period, School of Science faculty had on demand access to seventy-two canceled titles. Fifty-four unique users made ninety-nine successful purchases at an average cost of $29.38 per article and an average delivery time of 2 hours and 17 minutes.
Before opening the service to other faculty in August 2015, content available through Articles on Demand was expanded to include all available titles canceled since 2012 as well as titles frequently requested through interlibrary loan. The Library continued to add canceled titles on an annual basis until 2018 when the available content was expanded to include all non-subscribed titles available through the CCC Get It Now service. Though costs have increased over the years, particularly with the significant expansion of available content in 2018, Articles on Demand expenditures still remain insignificant in comparison to the subscription costs associated with the titles faculty are able to access. In fiscal year 2020, IUPUI faculty purchased 610 articles through the service at a total cost to the Library of less than $23,000. By comparison, the cancellations that precipitated the creation of Articles on Demand in 2014 would have renewed that year for nearly $180,000. Articles on Demand provides IUPUI faculty with access to far more content than the Library could ever subscribe to with its limited budget.

Strategy 3: Promoting Open Access as the Business Model for Journals

While the Library does monitor the growth in open access publishing and recently subscribed to Unsub to assist with this aspect of collection analysis, the main thrust of the Library’s support of open access publishing has been through the development and hosting of digital content on a variety of platforms. Strategy 3 of Lewis’s model focuses on open access as the predominant business model for journals, and we contribute to this through our own Open Journals @ IUPUI (https://journals.iupui.edu/). Library publishing is an essential mechanism for growing gold open access and is one of many ways in which libraries are attempting to align the scholarly communication ecosystem with library values. The library’s Center for Digital Scholarship (Center) currently hosts twenty-four journals, representing a mix of historic and current publications. Active journals are highly encouraged to make their content immediately open access, but the Center does allow a maximum two-year embargo. Article views have grown by a factor of eight in the last five years, bringing total views to more than 325,000 in 2020. Advances in Social Work, open access since 2008, had nearly 700,000 views in the past five years. Maintenance of Open Journals @ IUPUI requires a remarkable commitment of time and energy on the part of our digital publishing librarian, who also serves as the Center director. The Center is currently developing a strategic roadmap that will include the training and development of staff in and outside the Center to help build the Library’s overall investment in the growth of open access content.

In addition to the publishing program, the Center puts significant effort into the implementation of the IUPUI Open Access Policy and the growth of the Library’s institutional repository, IUPUI ScholarWorks. The IUPUI Faculty Council passed a campus open access policy on October 7, 2014. The policy follows the Harvard model in that it preemptively retains the rights of the author and grants the university the right to distribute faculty work (IUPUI n.d.-a). Faculty can opt out on an article-by-article basis. Since the passage of the policy, the IUPUI Staff Council (2015) and the Graduate
and Professional Student Government (2020) have issued statements of support/endorsements of the IUPUI Open Access Policy.

The IUPUI Open Access Policy celebrated its five-year anniversary in 2019. In those five years, the Library made more than ten thousand IUPUI faculty-authored works open access in IUPUI ScholarWorks. “As a result, these articles have been downloaded over 1 million times by readers from around the world” (IUPUI University Library Center for Digital Scholarship 2019). This work is currently the more practical approach to making the majority of IUPUI research outputs open access, particularly in light of an increasing number of open access mandates from funders. In 2020, IUPUI ranked number eleven, just .06 percent behind Harvard at number 10, in the CWTS Leiden Ranking for percentage of articles published from 2015 to 2018 that were available through green, or self-archived, open access. IUPUI’s percentage is 65.99 percent (Centre for Science and Technology Studies 2020).

Strategy 4: Growth of Open Content and Discovery

While the Library is not yet programmatically substituting open content for subscription databases, there have been efforts to increase user awareness of and comfort with open resources. The Library increasingly integrated open content into its existing discovery systems, first by adding open content to the link resolver (360Link) and then to the discovery layer (EBSCO Discovery Service). Additionally, open content such as Wikipedia does seem to have impacted use of basic reference databases, which has factored into some subscription decisions. In the near term, the Library is focused on enhancing its negotiation strategies and streamlining subscription decision-making processes. The Library also recently subscribed to Unsub, a data dashboard that allows libraries to easily analyze not only usage and cost but also takes alternative access into account to assist with identifying additional journal cuts to meet a required budget reduction during the pandemic.

Strategy 5: Investing in Open Content and Infrastructure

The Library has begun the slow process of redirecting collections dollars to support open content. In 2013, the Library began funding an Open Access Publishing Fund (Fund) with additional contributions from other units across campus. The Fund provides support for “reasonable publication charges for articles in fee-based, peer-reviewed journals that are openly accessible” (Odell 2016, 1). Though the funds are housed in the collections budget, the Fund is jointly managed by the Center). Since the Fund’s inception, the Center has received more than 300 applications and supported 214 articles at a cost of more than $315,000 (Odell 2020, 2).

Clearly, Library funding alone cannot support APCs for open access publishing, and libraries are surely not funding them alone now. It is difficult to assess the amount of money universities, whether through libraries, research offices, or departments, are
investing in APCs. The demand on the Library’s Fund has grown each year since it began with the 2019–20 academic year seeing a 29 percent increase in spending (Odell 2020, 1). Increasing demand on the Fund combined with a reduction in available funds for fiscal year 2021 required a revision of the author eligibility criteria and a lowering of the award cap in an attempt to keep Fund expenditures within budget. These publishing fees can and should be built into grant proposals whenever possible, particularly when the potential funder mandates open access publishing, so that libraries can focus their limited resources on those authors less likely to receive grant funding for their research. The Library also invests considerable time and effort in developing digital collections of open content based on the Library’s own special collections as well as the collections of community partners. The Library currently manages more than one hundred collections in OCLC CONTENTdm and DSpace. These digital collections represent university records, philanthropy and German-American special collections, artist books, and cultural heritage collections with partners like the Children’s Museum, Conner Prairie, the Indianapolis Motor Speedway, and many others. Most recently, the Library has embarked on a 3-D/VR (virtual reality) initiative to build full environments that can be used to enhance faculty teaching and research (Lehr 2020; Grossman 2020) and capture Indianapolis’s cultural heritage (explore more at https://sketchfab.com/iupuiul).

The Library has chosen to support external content-based efforts such as SCOAP3 and Open Book Publishers as well as organizations supporting libraries such as SPARC. The Library holds few “Big Deals,” but is working to develop its negotiation principles and preferred licensing terms to better reflect its open values in its content strategies. Additionally, the Library created a Scholarly Communication Advisory Group, which played a key role in the development of the Library’s Open Values Statement (IUPUI University Library 2019) and will evaluate open investment opportunities present and future.

The Library has long made investments in open infrastructure from early and ongoing DSpace development support to Open Journal Systems and ArchivesSpace implementations to open source development partnerships with Indiana University Bloomington and the Open Access Button. This last investment in open infrastructure is a perfect marriage of the Library’s on demand content strategies and its commitment to open. A project team within the Library partnered with the Open Access Button to build InstantILL, which launched in 2019. InstantILL is a simple tool that integrates searching library holdings and open access materials as a first step in the interlibrary loan process (Paxton et al. 2019). Implementation of InstantILL locally has improved service to users and simplified staff workflows, but the Library’s investment in this piece of open infrastructure has had a global impact during the pandemic.

Many aspects of library services were impacted by the COVID-19 pandemic, including interlibrary loan. The IFLA Document Delivery & Resource Sharing Section Standing Committee (Committee) sought to provide relief to the many libraries worldwide that could not access their physical collections. Thanks to the preexistence of InstantILL and the support of the Open Access Button, the Committee was able to quickly develop and launch the RSCVD (Resource Sharing during COVID-19 or “received”) initiative in a few
short weeks. By going to rscvd.org, libraries can place requests that are then handled by volunteer library workers. From April to December 2020, more than 10,000 requests were received from twenty-eight countries, and more than 6,000 of those requests were filled via the volunteer corps. Plus, more than 700 requests were immediately delivered through OAB’s InstantILL before even reaching the RSCVD volunteers.

**Practice: Selling the Change – More Than Ever Before**

**Background and the Message**

As with most academic library services, success is in part dependent on uptake from key stakeholders including campus administration, students, faculty, staff, and library personnel. The Library knew achieving widespread buy-in would require a robust outreach plan and a departmental pilot phase to collect feedback and provide faculty-level user experience with the on demand process. In May 2018, IUPUI Administration and Faculty Council appointed an Ad Hoc Task Force on Library Procurement Strategies just ahead of the long-term dean’s retirement. This task force formed in reaction to several years of necessary journal cuts and regular information sharing from Library administration regarding decreasing purchasing power caused by flat budgets and ever rising journal costs. The task force, made up of representatives from faculty governance’s budgetary affairs, research affairs, and library affairs committees, as well as librarians, was tasked to analyze the budgetary pressures the library faces and consider possible short- and long-term solutions. It is important to note that the task force charge preamble from campus administration demonstrated an understanding by campus administration of the unsustainable economics of the current scholarly communication environment and lauded the library’s to-date tactics for quality provision of resources and services.

Library administration was buttressed rather than concerned by the formation of the task force. It provided an excellent opportunity to build in-depth understanding of the issues among task force members and to engage them in suggesting solutions. The Library members of the committee assembled data that used Integrated Postsecondary Education Data System (IPEDS) data to compare various aspects of IUPUI Libraries to peer institutions (other urban universities with medical schools), other public universities in Indiana, and our aspirational R1 universities. The data demonstrated that IUPUI libraries’ budget was near the bottom of our current peer group and a far cry from our aspirational peers. This insight made a significant impact on the task force members and was prominently discussed in the report. We also knew the final report of a task force charged by campus administration and made up of faculty governance constituents would be reviewed by more people, and circulated in venues not immediately accessible to the Library for general communication. Ultimately the task force proposed short-, mid-, and long-term solutions that were in line with the Library’s on demand procurement plan.
In 2010, the Library intentionally searched for and hired a librarian to lead our Campus Outreach Group with the goal of bringing disparate, unit-based communication methods into a cohesive outreach program. This individual took on an additional role in 2018 as a resource development liaison, tasked with developing an outreach plan for our on demand services. Relying on his communication expertise and the Library’s previous experience coordinating a multiyear Open Access Policy communication strategy, we knew that tapping into the values of each stakeholder group was important and that designing slightly unique messages per group would make a difference.

With our stakeholders identified, we created an outreach strategy and timeline that:

- Centralized the creation of the overall message, “More Than Even Before,” as well as the message design, communicator, and mode (printed pamphlet, email, On Demand website http://ulib.iupui.edu/on-demand/)
- Tailored messages to the key stakeholder groups
- Provided centralized, easy access to a toolkit of outreach materials for all Library personnel to adapt and utilize (see sample materials: https://archives.iupui.edu//handle/2450/12706)
- Provided all Library staff and librarians with training on communicating the message to different stakeholders
- Identified the most appropriate message communicator depending on targeted audience
- Developed a timeline that released messages that were progressively informative and that coordinated externally established events (such as presenting in campus-wide faculty and staff governance meetings) with internally controllable messaging events (such as email and postcards sent by library to all faculty)
- Assessed the user experience of the on demand services

The resource development liaison developed the “More Than Ever Before” campaign, highlighting that users will have access to more services, more books, more videos, and more articles than they ever have in the past. Typically, collection budget cuts rouse ire about what will be missed. By focusing on the ability to access more content on demand, we moved the conversation away from cancellation and toward constant access to the world’s best published information purchased at a user’s time of need. A more detailed outline of the strategy and its timeline can be found in the appendix.

As described earlier in this article, we believe academic libraries will move from being primarily understood as content providers to service providers. “More Than Ever Before” allowed us to describe the Library in this light and move the traditional focus on our holdings to our services and expertise. We can buy the article or book a user needs quickly and use the money saved to instead support personnel who formulate research data management plans or upload faculty articles into the institutional repository or help promotion and tenure candidates gather research metrics for their dossier. By focusing on all the services Library users now have access to, in addition to still getting the research they need, when they need it, we shift the focus to “More” and away from the usual “Less” of library material cuts.
Stakeholders

Library Personnel.

We purposefully set library personnel as our first priority, wanting to build upon relationships individual library personnel have developed with various stakeholders. Historically the library’s communication network has been fairly informal, built through many years of personnel developing individual relationships with faculty, staff, and students including subject liaisons collaborating with instructors to teach information literacy, data librarians helping researchers develop data management plans, interlibrary loan associates ensuring faculty get access to hard to locate research, and library personnel serving with colleagues from every unit on campus-wide committees. Important to note is IUPUI librarian status as tenure-track faculty. This gives librarians an opportunity to participate in and lead campus-wide faculty governance, faculty learning communities, more readily serve as adjunct teaching faculty, and participate in campus administratively formed task forces and committees. Similarly, library staff regularly participate in and lead our campus-level staff council. Extensive participation in this work as colleagues with teaching/research faculty further solidifies the Library’s reach and integration as an academic unit. This network of campus-level work is pivotal in our communication strategy both culturally within the campus community but also practically for proliferating opportunities to share the message.

To facilitate these already established relationships being influential toward a broader Library goal, it was important that library personnel were recognized and valued as stakeholders in the communication strategy. The messenger must understand, believe in, and be able to succinctly articulate the message.

During our January 2019 biannual, all-personnel professional development week, a session was devoted to sharing and creating connection with the “More Than Ever Before” message. After a presentation to library personnel that included all the variety of messages developed for all stakeholders, each library personnel created an individualized elevator speech. The activity was adapted from “The Art of the Elevator Pitch: A Qualitative Study on the Key Rhetorical Features of a Successful Venture Capital Pitch,” by Geovon Boisvenue (2013). Everyone left with a personalized message, one rooted in their specific work function, that they could call upon when given the opportunity. See workshop materials at https://archives.iupui.edu/handle/2450/12707. Most importantly, the exercise allowed each personnel member to personally connect to and see their role in the outreach campaign. This session also gave the library administrators who would be making presentations across campus the opportunity to test and fine-tune the message and anticipate future stakeholder questions.

Following the launch of the external campaign in the Spring 2019 semester, the resource development liaison continued to engage library personnel to demonstrate their understanding and support of the effort. He separately surveyed librarians and library staff on their understanding of the new Resource Acquisition Model and their
comfort communicating the model to external stakeholders. The survey instrument included a prompt to describe the model in the participant’s own words. These data were useful in creating further updates on the model and campaign.

Faculty and Staff.

With faculty and staff, we focused on communicating how the Library’s collection, expanded with thousands of on demand titles, and would enable the Library to better support their teaching and research. We shared pilot data that demonstrated a quick turnaround time for requested resources and qualitative feedback from researchers who participated in the pilot with positive experiences. We demonstrated the ease with which a book could be ordered on demand from within the catalog and provided data reflecting the more expansive list of titles to which they would have access. Traditional and new services were given equal attention (again, working to move the focus from the library’s holdings to the library’s services) including institutional repository upload support, data management, VR in teaching, research metric support, open journal creation, curriculum development support, digital pedagogy expertise, and so on.

Faculty and staff were reached through a multitude of formats: a postcard and email sent to every member, multiple presentations at a variety of faculty and staff governance meetings, and more targeted follow-up email correspondence between subject librarians and their schools/departments. The resource development liaison was also featured in the campus faculty and staff newsletter discussing the Books on Demand program (Neumeyer 2019). We strategically included nonfaculty personnel in this outreach effort to reach the entire campus community. We know that the staff stakeholder group is often overlooked on campuses despite their crucial role in research, teaching, service, and student advising, a lesson learned from our open access outreach efforts. Many personnel in nonfaculty positions on our campus utilize the library’s resources and services for their own teaching and research in addition to supporting those activities for faculty.

These stakeholders took well to the idea that the Library was going to use its money wisely and purchase items just in time for use, rather than just in case. They especially liked the idea that, through on demand requests, their teaching and research would more actively drive the Library’s collection. Some faculty engaged in productive conversations with librarians about collection development profiles and departmental teaching and research areas. Indeed, in departmental meetings, faculty expressed excitement about having access to more content than the Library would otherwise be able to provide.

Students.

On demand access was not a hard sell to students used to the ways of digital information access. Here our focus was less on convincing students that they would still
be able to get access to the articles and books they required and instead on the multitude of services we provide. We crafted two slightly different messages for undergraduate and graduate students with graduates being introduced to more open scholarship, open science, and student-as-author topics such as establishing online scholarly profiles (e.g., Google Scholar, ORCID). Both print and digital messages, including social media posts and videos, were developed, and we highlighted new services particularly appealing to students such as the Library’s 3D printing studio, VR lab, and recently enhanced study rooms and spaces within the Library. Subject librarians teaching or presenting in the classroom distributed handouts and bookmarks, and a cache of printed material was available during all student-facing events (orientation, coffee service during finals week, special events, etc.).

_Campus Administration._

While budget and resource costs were part of the faculty and staff stakeholder messaging, these issues were understandably a primary focus in our campus administration outreach. On demand as a fiscally responsible avenue for providing improved research support was our message, and our pilot data provided evidence. For example, because the Department of History participated in the pilot, we could show that from September to December of 2017, 124 books were automatically ordered as a result of the History approval profile, at a cost of $4,880. By applying a similar profile to that fund’s on demand process, from September to December 2018 only 3 books were purchased at a total of $314, a cost savings of $4,566.

The Library’s then recently appointed interim dean took advantage of two natural timeline opportunities to share the fiscally sound message: (1) the completion of the report from the Ad Hoc Task Force on Library Procurement Strategies necessitated a response from the Library and (2) introductory presentations from new campus leaders are common occurrences in campus administration meetings. Securing a spot on a variety of campus high-level meeting agendas was more easily accomplished as a result.

**Practice: Lessons Learned**

1. Starting with a detailed plan, including assessment strategies, is key but so is flexibility within that plan.

2. Robust, proactive, strategic, and standardized outreach for key library priorities is important and worth investing in. We now have a template process that can be applied to future key priority communications.

3. It is important to segment your stakeholder groups as narrowly as possible and communicate how your services solve their problems.
4. If at all possible, craft your messaging positively. Tell users what they are going to get before telling them what they might expect to lose.

5. Library advocacy for open access policies required a long period of continued work, but it has resulted in good support at the campus level and a replicable strategic advocacy and communication strategy.

6. Drawing on the existing strengths within the organization is key to advancing strategic efforts in an effective manner.

7. On demand can be effectively implemented and reduce costs for some formats but not all.

8. Database savings projected by Lewis have not yet materialized.

9. Creating a stronger bridge between scholarly communication and collections is an effective organizational strategy. Continued effort is needed in this area.

10. Early investments in open infrastructure (repositories and journal hosting) have provided clear benefits.

11. Library support for APC funding has been important, but will need to be reimagined as demand grows.

12. Librarians having faculty status matters. Library personnel participating in campus-wide service matters for building strong relationships.

Postscript: The Impact of the COVID-19 Pandemic

In their Ithaka S+R Research Report on the impact of the COVID-19 pandemic on academic libraries, Jennifer Fredrick, Roger Schonfeld, and Christine Wolf-Eisenberg (2020) found several trends:

- The pandemic reinforced and accelerated trends in library investments toward digital resources and services
- Library leaders feel they have been recognized for being well-positioned and prepared for the emergency pivot to support remote research, teaching, and learning
- Library directors prioritized staff well-being and organizational finances in their decision making
- Most libraries have experienced budget cuts in the current academic year, and there is great uncertainty about longer-term financial recovery

Frederick and colleagues conclude, “With so many US academic libraries facing cuts, some might be tempted to assume that the sector is bottoming out and will soon recover. To the contrary, we see risks of a further slide. . . . While a more optimistic
scenario remains possible as the political and public health situations develop, it would be irresponsible to forecast that the sector has reached a nadir” (Fredrick, Schonfeld, and Wolf-Eisenberg 2020, para. 12).

As the university quickly flipped to online teaching with Indiana University Keep Teaching (https://keepteaching.iu.edu) the Library’s investment in digital and on demand was fortuitous, allowing us to easily support instructors pivoting in-person classes to virtual. Our librarians doing work in the open access and open education arena anecdotally share that faculty interest in open has increased during the pandemic as many long-time instructors were faced with adapting traditional course content to digital. They are experiencing the value of finding quality, free content online and in turn understanding the usage/impact their work could have if similarly available. The Ithaka report and our experiences during the pandemic affirmed that our path toward on demand, open access, and a focus on library services and expertise was a necessary one. Though there will continue to be challenges, the IUPUI University Library is better positioned budgetarily and our service foci shift is better understood on campus. We would encourage others to follow our lead.
Appendix: Outreach Strategy and Timeline

August 2018
Library dean
   Email to deans of departments piloting
   Inform all deans and chairs of service launch with email and presentation
   Inform all library personnel of service launch with email and presentation
   Present at campus administration meeting
Web developer; resource acquisition liaison
   Website complete
Resource development liaison
   On demand pilot presented at librarian liaison meeting
   Email to university-wide library leadership

August 2018–ongoing
Resource development liaison; Library personnel
   Provide handouts at library student events
   Social media outreach targeted at students

September 2018
Library dean
   Present at Library Affairs Committee of campus Faculty Governance
   Presentation to campus leaders and donors
Resource development liaison; Library administration
   Present at university-wide Library leadership meeting
Resource development liaison; technical services lead
   Present at Library Leadership meeting
Resource development liaison
   University-wide Library newsletter
   Digital displays in library
Technical services lead
   Email to all IU libraries technical and public services personnel

September–October 2018
Technical services lead
   Pilot on demand book records loaded into catalog
Librarian liaisons
   Email to pilot faculty

September–December 2018
Resource development liaison; Library administration
   Review pilot data
Resource development liaison
   Survey pilot faculty

October 2018
Librarians on faculty governance
   Present at campus faculty governance meeting

January 2019
Resource development liaison; Library administration
   Training for all library personnel
Resource development liaison
Share promotional materials with library personnel with email and workshop
Inside IUPUI Story—press release
Technical services lead
All on demand book records loaded into catalog (launch official service)
February 2019
Library dean
Present at campus staff council meeting
March 2019
Resource development liaison
Ad broadcast on the Campus Television system
Resource development liaison; liaison librarians
Email to all graduate and undergraduate students
April 2019
Resource development liaison
Print mailing to all faculty and staff
Note

The spreadsheet that documents the model presented in section 4 can be found at "Thought Experiment Model for 'The Efficient Provision of Information Resources in Academic Libraries: Theory and Practice," https://hdl.handle.net/1805/24880.

References


Authors

David W. Lewis has a BA in history from Carleton College, an MLS from Columbia University, and certificates of advanced study in librarianship from the University of Chicago and from Columbia University. He began his library career as a reference librarian and became a library administrator. He worked at Hamilton College, Franklin and Marshall College, Columbia University, and the University of Connecticut before moving to Indiana University Purdue University Indianapolis (IUPUI) in 1993. He became the dean of the University Library in 2000, a position he held until his retirement in 2018. He has published over fifty articles and book chapters. His book Reimagining the Academic Library was published in 2016. In 2018 he was named the ACRL Academic/Research Librarian of the Year. ORCID: https://orcid.org/0000-0001-9711-5565.

Tina Baich is a librarian at IUPUI University Library, where she serves as senior associate dean for scholarly communication & content strategies. She is a graduate of the Indiana University Schools of Library & Information Science and Liberal Arts with master’s degrees in library science and public history. Her current portfolio includes the Center for Digital Scholarship, Resource Acquisition & Description, Resource Sharing & Delivery Services, and the Ruth Lilly Special Collections & Archives. She previously led the library’s resource sharing efforts for twelve years and also served as head of Bibliographic & Metadata Services for five years. She is the 2016 recipient of the ALA’s Virginia Boucher-OCLC Distinguished Interlibrary Loan Librarian. Her writing has focused on the intersections of open access and interlibrary loan, and she has presented on this topic at state, regional, national, and international conferences. You can learn more about Tina at tinabaich.com. ORCID: http://orcid.org/0000-0002-8046-2461.

Kristi L. Palmer is the Herbert Simon Family Dean of IUPUI University Library. She earned a BA in history from Ball State University in 1999 and a master of library science from Indiana University in 2001. She has worked professionally in the arena of digital library development for eighteen years, served as a history and women’s studies librarian, and is adjunct faculty with the IUPUI School of Informatics & Computing. Her research interests include open access, scholarly communication, and Indianapolis history. Her digital library and community engaged work earned recognition as one of Library Journal’s Movers & Shakers in 2009 and Indianapolis Business Journal’s Top 40 Under 40 in 2016. ORCID: https://orcid.org/0000-0002-6873-1630.

Willie M. Miller is the associate dean for communication and technology at IUPUI University Library. In his position, he oversees the library’s Operations, Client Support, and User Experience units and provides vision for the library’s communications strategies. He was previously the library’s liaison to the IU School of Informatics & Computing and the Department of Journalism and Public Relations and Resource Development Liaison. He received his master of library science degree from Indiana University Bloomington. He also leads the library’s Campus Outreach Group, which engages students and faculty through library marketing and events. He is an IU Trustees’ Teaching Award recipient and was named a Mover & Shaker by Library Journal in 2016. ORCID: https://orcid.org/0000-0001-7826-7950.